Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 3

8. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1300 A 0 B 1105 DL

Komb.-Nr. 0 400 876 260

supersedes 12.83

company Daimler-Benz

engine OM 352 A
92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1300	10,0+0,1	6,7-6,8	0,3(0,45)			
350	6,9-7,1	0,8-1,2	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	lose	350	7,0	1300	10,0-10,1
	x = 5,0								500	10,4-10,6
							100	min.19,0	750	10,4-10,5
ca. 65	9,0	1340-1350					350	6,9-7,1	1140	10,0-10,1
(2a)	4,0	1420-1450					490-550	= 2,0		
	1540	0,3-1,7					700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	67,0-68,0 (65,0-70,0)	1340-1350*	750	59,0-61,0 (56,5-63,5)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

A1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x 8

2. Edition

En

PES 6 A 90 D 410 RS 2293 RQV 300-1400 AB 1142 L

Komb.-Nr. 0 400 846 477

supersedes 5.84

company Daimler-Benz

engine OM 352 A
124,0 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Oil 413

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,5-7,6	0,3(0,45)			
300	7,6-7,8	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1420	16,0-19,4	-	-	-	ca. 15	100 300	min.9,2 7,6-7,8	250 600 950 1400	0,9-1,1 3,1-3,4 5,3-5,5 8,2
ca. 61	10,3 4,0 1650	1435-1445 1550-1580 0-1,0				350-475 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1375	0,7 bar 75,0-76,0 (73,0-78,0)	1435-1445* 1300	LDA 500	0 bar 56,0-58,0 (54,0-60,0)	100	71,0-81,0 (68,0-84,0) = 14,3-14,7 mm RG	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

A2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1375 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A..RS2293 + RQV..AB1142L	0,70		11,3 - 11,4
		0	11,0 - 11,1
		0,28	11,1 - 11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A3

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 9
1. Edition
En

PES 6 A 90 D 410 RS 2293 RSV 350-1000 A0B 1150 L

Komb.-Nr. 9 400 085 236

supersedes

company Daimler-Benz

engine OM 352 (A)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	10,0+0,1	6,0-6,1	0,3 (0,45)			
350	7,1-7,3	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,8	-	-	-	ca.20	350	6,7	1000	10,0-10,1
	x =						100	min.19,0	500	10,0-10,2
ca. 42	9,0	1040-1050					350	7,1-7,3	400	11,6-11,8
(2a)	4,0	1090-1120					430-500	= 2,0		
	1250	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control-rod travel mm 9
1000	59,5-65,5 (57,5-62,5)	1040-1050*	-	-	200	14,2-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

A4

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 q 10
1. Edition
En

PES 6 A 90 D 410 RS 2293 RSV 350-1400 A0B 1150
Komb.-Nr. 9 400 085 226

supersedes –
company Daimler-Benz
engine OM 352 (A)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1380	10,0+0,1	6,2-6,3	0,3 (0,45			
350	7,1-7,3	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 30	350	6,7	1380	10,0-10,1
	x = 4,0						100	min.19,0	500	10,0-10,2
ca. 61	9,0	1420-1430					350	7,1-7,3	400	11,6-11,8
(2a)	4,0	1505-1535					460-680	= 2,0		
	1600	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1380	61,5-62,5 (59,5-64,5)	1420-1430*	-	-	100	14,2-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

A5

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 s 2
4. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 410 RS2293 EP/RSV 350-1400 A0 B2002 L (1)
A0 B2053DL (2)

supersedes 10.82
company Daimler-Benz
engine OM 352
(1 - 100kW - 130PS)
(2 - 82 kW - 111PS)

Komb.-Nr. 0 400 876 265 (1)
0 400 876 280 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Test timing at prestroke (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,1 - 6,3	0,3(0,45)	9,0 +0,1	5,1 - 5,2	
350	7,1-7,3	0,9 - 1,5	0,2(0,4)	7,4-7,6	0.9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

2002L (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0				ca.31	350	6,7	-	-
	x =	4,0					100	min. 19		
ca. 63	9,0	1420-1430					350	7,1-7,3		
(5)	4,0	1505-1535					560-620	=2,0		
	1600	0,3-1,7					700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1380	61,5 - 62,5 (59,5 - 64,5)	1420-1430*			100	14,2-14,8 mm RW	350	7,2
					1517	3,6- 4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

A6

B. Governor Settings

2053DL (2)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0				ca.29	350	7,0	1380	9,0
	x	= 4,0					100	min. 19	1000	9,5
ca.61	8,0	1420-1430					350	7,4-7,6	500	9,9
(5)	3,4	1455-1485					530-700	590=2,0 0 - 1		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(2) 1380	51,0 - 52,0 (49,0 - 54,0)	1420-1430 *	1000	55,5 - 58,5 (53,5 - 60,5)	100	72,25 - 82,25	350	7,5
			(6a) 600	46,0 - 48,0 (44,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil ISO 4113

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to ... rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

A7

47 En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 r 5

1. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1500 A 2 B 741 L
A 2 C 741 L

supersedes

Komb.-Nr. 0 400 876 273

company Daimler-Benz
engine OM 352
100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1450	9,9+0,1	6,8-6,9	0,3(0,45)			
350	7,4-7,6	1,9-2,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 21	350	7,5	-	-
	X =	1,0					100	min.19,0		
ca. 60 (2a)	8,9	1500-1505					350	7,4-7,6		
	3,4	1555-1570					435-495	=2,0		
	1650	0,3-1,7					550	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1450	67,5-68,5 (65,5-70,5)	1500-1505*	-	-	100	14,2-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.84

A8

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 r 3
3. Edition
En

PES 6 A 90 D 410 RS 2293 Z RSV 350-750 A0B 741 L
Komb.-Nr. 0 400 876 267 A0C 741 L

supersedes 8.82
company Daimler-Benz
engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,8-9,9	5,0-5,1	0,3(0,45)			
350	6,4-6,6	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.22	350	6,5	-	-
	x =	2,0					100 min.	19,0		
ca. 34 (5)	750-755	8,8					370-430	= 2,0 **		
	788-801	4,0								
	820	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
700	50,0-51,0 (48,0-53,0)	750 *	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

A9

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1b1

2. Edition

En

PES6A85D 410/3 RS2366 EP/RS 325/1325 A0B 691 DL

supersedes 9.83

company KHD

engine BF6L913

88 kW/2650 min^{-1}

Komb.-Nr. 0 400 866 057

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1325	11,4+0,1	7,6-7,7	0,3(0,45)			
200	8,9-9,1	1,6-2,2	0,3(0,05)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	VH ca.6	325	6,0	850	11,9-12,1
	X = 7,0					FH ca.3	400	2,7-3,7	500	11,9- 12,
VHca.66	10,4	1355-1365					800	2,7-2,9		
FH max.	4,0	1450-1480					1300	2,0-2,2		
(2a)	1630	0 - 1,0					1400	0 -1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1325	0,5 bar 75,5-76,5 (74,5-77,5)	1355-1365*	LDA 500	0 bar 45,0-48,0 (43,5-49,5)	100	110,0-120,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing / increasing pressure – in bar gauge pressure

KHD 6,1 b 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PES 6 A...RS2366 + EP/RS...A08691DL	0,50	0,38 0,10	11,4 - 11,5 11,1 - 11,2 9,4 - 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A11

En Au

Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 KHD 4,1 c
2. Edition

En

PES 4 A 80 D 410/3RS2523 RS 325/1400 A0B 699 DL
A0C 699 DL

Komb.-Nr.: 0 400 861 050

supersedes 9.82
company KHD
engine F 4 L 913
64 kW
/ 2800 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,0+0,1	6,8-6,9	0,2(0,35)			
325	8,4-8,6	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				VHca.55	325	8,5	1400	12,0-12,1
	x	= 5,25				FHca.26	100	min.11,0	1090	12,2-12,5
VHca.55	1440-1450=11,0						425-455	= 5,5	550	12,8-12,9
(2a) FH max.	1500-1530= 4,0 1660=0,3 - 1,4						180-230			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	68,0-69,0 (66,5-70,5)	1440-1450*	800	61,5-63,5 (60,0-65,0)	-	-	325	8,5
			550	60,5-62,5 (59,0-64,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A 12

A12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c 3

2. Edition

En

PES 4 A 80 D 410/3 RS 2523

Komb.-Nr. 0 400 864 043

RSV 325-1400 A2B 1022 DL
A2C 1022 L

supersedes 9.84
company KHD
engine F4L 912
64 kW/2800 min^{-1}

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,0+0,1	7,0-7,1	0,2(0,35)			
325	8,8-9,0	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.21	325	5,0	1400	12,0-12,1
	X = 4,5						100	min.19,0	935	12,2-12,4
ca.58	11,0	1440-1450					325	5,4-5,6	500	13,2-13,3
(2a)	4,0	1515-15[illegible]					525-585	= 2,0		
	1650	0,3-1					700	0 - 1,0		

The numbers denote the sequen[illegible]

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1400	70,0-71,0 (68,5-72,5)	1440-1450*	850	61,5-63,5 (60,0-65,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

Test Specifications Fuel Injection Pumps and Governors

② NPP 001/4 DAF 8,3i
5. Edition
En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524 RQ 225/1200 AB 1008 L
Komb.-Nr. 0 400 646 251
Specifications apply to test tubing 1 680 750 015

supersedes 6.83
company: DAF
engine: DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,30-2,40 (2,25-2,45) RW9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,1 - 7,2	0,3(0,45)			
225	6,5-6,7	0,9 - 1,5	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. = 4,5-5,5° camshaft

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	8,4	1245-1260	225	8,7	100	min.10,2	-	-
				4	1325-1355						
VH =	max. 46°			150	0 - 1,0			225	8,6 - 8,8		
								410-450	=2.0		
								550	max. 1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1000	71,0 - 72,0 (69,0 - 74,0)	600	-	-	100	128,0-138,0 (125,0-141,0) = 19,5 - 21,0 mm RW

Checking values in brackets

1.85

A14

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 8,3 k 2

2. Edition

En

PE 6 A 95 D 410 RS 2525 RQ 225/1200 AB 1156 L

supersedes 8.83

company DAF

engine DH 825

Specifications apply to test tubing 1 680 750 015

Komb.-Nr. 0 400 646 268

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,[illegible]	7,3-7,5	0,35(0,6)			
225	5,7-5,9	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650 VH=	19,2-20,8 max. 46°	650	20,0	9,4 4,0 1400	1245-1260 1300-1330 0-1,0	225	5,8	100 225 310-350 450	min. 7,3 5,7-5,9 2,0 max. 1,0	1200 650 1035 1100	10,4-10,5 11,3-11,4 10,9-11,1 10,5-10,8

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation: At 1245-1260 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1200	73,0-75,0 (71,0-77,0)	-	800	74,5-77,5 (72,0-80,0	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW

Checking values in brackets

1.85

A15

405

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 DAF 8,3 k
7. Edition
En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2525, Y, X RQ 225/1200 AB 1007 L

supersedes 82
company DAF
engine DN 825 (Y.X)
DHR 825

Specifications apply to test tubing 1 680 750 015 !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 RW9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8 - 11,0	0,35(0,6)			
225	5,7-5,9	0,7 - 0,9	0,35(0,5)			
		POrt closing difference between control.rod travel 9 mm and max. = 3 - 4° camshaft				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	min.7,2	-	-
VH =	max. 46°			4,0	1315-1345			225	5,7-5,9		
				1390	0 - 1,0			340-380	= 2,0		
								450	max. 1,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1230-1245 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar		LDA	0 bar	100	120,0-130,0
1000	108,5 - 110,5 (106,5 - 112,5)		600	84,5 - 87,5 (82,0 - 90,0)		(117,0-133,0) = 19,5-21,0 mm RW
X			X			
1000	90,5 - 92,5	(12 mm RW	600	77,0 - 80,0		
Y			Y			
1000	99,0 - 101,0	(12,5 mm RW)	600	77,0 - 80,0		

Checking values in brackets

1.85

A16

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 k

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 A ..RS 2525 + ..AB 1007 L	0,7	0,30 0,26 0	12,6 - 12,7 12,3 - 12,4 11,7 - 12,0 11,5 - 11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 5 A 80 D 410/3 RS2526 EP/RSV 325-1150 A3 B2014DL
A8 C2014L

Komb.-Nr. 0 400 865 016

supersedes 9.84
company K H D
engine F5 L912
63kW - 85PS

1 - 3 - 5 - 4 - 2
0 - 72-144-216-288° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2526 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,5 - 5,6	0,2(0,35)			
325	+0,1 9,0-9,2	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0				ca.21	325	5,0		±0,1
	X =	4,75					100	min. 19	1150	11,8
ca.55	10,8	1190-1200					325	5,4-5,6	950	12,1
(5)	4,0	1235-1265					390-450	= 2,0	775	12,7
	1350	0,3 - 1,7					500	0 - 1	450	12,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1150	55,5 - 56,5 (54,0 - 58,0)	1190-1200*	775	57,0 - 59,0 (55,5 - 60,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 6,0 a 1

1. Edition

En

PES 6 A 90 D 410 RS 2667 RQV 300-1400 AB 1201 L

Komb.-Nr. 0 400 846 535

Specifications apply to test tubing 1 680 750 015

supersedes –

company: Daimler-Benz

engine: OM 366
100 kW

Tesoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	6,4-6,5	0,3(0,45)			
300	8,7-8,9	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 21 (3a)	100 300	min.10,3 8,7-8,9	300 500	0,8-1,3 2,3-2,8
ca. 61	10,1 4,0 1630	1440-1450 1545-1575 0-1,0					580-640	=2,0	750 1500	4,1-4,3 8,5

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	63,5-64,5 (61,5-66,5)	1440-1450*	500 900	51,0-54,0 (48,5-56,5) 53,5-56,5 (51,0-59,0)	100	78,0-88,0 (75,0-91,0) =16,4-17,0 mm RW	1400 500 900 1100	11,1+0,1 12,2+0,1 11,7+0,2 11,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 7,0 g
6. Edi
En

PE 6 P 110 A 320 RS 413 RQV 250-1200 PA 499
Komb.-Nr. 0 401 846 432

supersedes 8.83
company Volvo
engine TD 70 F
174 kW (237 PS)

Tesch-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,2+0,1	12,5-12,7	0,4(0,75)			2,5 ±0,1 (2,2-2,9)
250	5,2-5,4	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min. 6,7	200	0,6-0,9
							250	5,2-5,4	530	3,2-3,6
ca. 62	11,2	1240-1250							870	5,8-6,0
	4,0	1370-1400							1200	8,2
	1500	0 - 1,0				300-410 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 125,0-127,0 (122,0-130,0)	1240-1250 *	LDA 700	0 bar 79,0-82,0 (76,0-85,0)	100	170,0-210,0 = 20,0-21,0 mm RW	-	-
					250	16,0-20,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

A20

D. Adjustment Test for Manifold Pressure Compensator

VOL 7,0 g

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 413 + RQV..PA 499	0,70		12,2 - 12,3
		0	9,6 - 9,7
		0,54	12,0 - 12,1
		0,17	9,7 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 7,0 g2

2. Edition

En

PE 6 P 110 A 320 RS 413 X RQV 250-1200 PA 499

Komb.-Nr. 0 401 846 470

supersedes 7.83

company Volvo

engine TD 70 FC

Test-No. ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	12,7-13,0	0,4(0,8)			2,5+0,1
250	5,2-5,4	1,6-2,0	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min.6,7	200	0,6-0,8
							250	5,2-5,4	530	3,1-3,5
ca. 62	11,3	1240-1250							870	5,6-5,9
	4,0	1370-1400							1200	7,9
	1500	0-1,0				300-410 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 127,0-130,0 (124,0-133,0)	1240-1250*	LDA 700	0 bar 79,0-82,0 (76,0-85,0)	100	170,0-210,0 =20,0-21,0 mm RW	-	-
					250	16,0-20,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

A22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 413 X + RQV..PA 499	0,90	0 0,62 0,24	12,3 - 12,4 9,6 - 9,7 12,1 - 12,2 9,7 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 ROL 16.2 a 1
2. Edition

En

PE 8 P 120 A 920/4 RS 3047 RQ 900 PA 491
Komb.-Nr. 0 401 848 716
1 - 6 - 2 - 5 - 8 - 3 - 7 - 4 je 45°+-0,5°(+-0,75°)

supersedes 3.84
company Rolls Royce
engine C 8 TCA
250 kW (340 PS)

Tested to 4/13

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 -3,6 (3,45-3,65) mm (from BDC) RW= 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,4+0,1	22,0-22,2	0,5 (0,9)			
300	5,1-5,3	2,1-2,7	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,4 4,0 1050	900-905 932-941 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	220,0-222,0 (217,0-225,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

1.85

A24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 m 2

1. Edition

En

PE 6 P 110 A 720 RS 3006 RQV 200-1100 PA 383 KR

Komb.-Nr. 0 401 846 711

supersedes

company: Scania DS 1102

engine:

Tesci-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC); RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,0+0,1	15,6-15,8	0,6(0,8)			2,5±0,1 (2,2-2,9)
225	5,7-5,9	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11 ③a	100	min.7,2	150	0,5-0,8
							225	5,7-5,9	470	3,7-3,9
ca. 63	13,0	1140-1150					360-420	2,0	780	5,3-5,4
	4,0	1270-1300							1100	8,0
	1400	0-1,0								

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation Intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 650	0,9 bar 156,0-158,0 (154,0-160,0)	1140-1150*	LDA 1100	0 bar 176,5-179,5 (174,0-182,0)	100	190,0-240,0 =20,0-21,0 mm RW	1100	14,0+0,1
							850	13,0+0,1
			LDA 500	0 bar 133,0-137,0 (131,0-139,0)			600	13,2+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 850 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3006 +RQV..PA 383 UR	0,90	0	14,0-14,1
		0,40	11,8-11,9
		0,25	12,9-13,0
			11,9-12,1

Notes:
(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SCA 11,0 y 1

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 c 2

1. Edition

En

PE 6 P 120 A 320 RS 3032 Y RQV 250-1100 FA 355/2 R

Komb.-Nr. 0 401 846 718

supersedes –
company: Volvo
engine: TD 120 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO #13

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,65-2,75) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	20,1-20,4	0,4(0,8)			2,5+0,1
250	5,3-5,5	0,9-1,3	0,3(0,6)			(max.2,2-2,9) **

Adjust the fuel delivery from each outlet according to the values in [ ].

** In case valve-spring spread is higher, change the initial tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10 ③a	100	min.6,9	200	0,7-0,9
							250	5,3-5,5	500	2,9-3,2
ca. 45	10,4	1160-1170					300-360	=2,0	800	5,0-5,3
	4,0	1230-1260							100	7,7
	1320	0-1,0								

Torque control travel s = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-204,0 (198,0-207,0)	1160-1170*	LDA 700	0 bar 148,0-152,0 (145,0-155,0)	100	410,0-460,0	-	-
					250	9,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3032 Y +RQV..PA 355/2 R	0,49	0,14	11,1-11,2 9,2-9,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 8,0 i 1
4. Edition
En

PE 6 P 110 A 720 RS 3034 Z RQV 200-1200 PA 554
Komb.-Nr. 0 401 846 770

superseded 3.84
company: Saab Scania
engine: DS8 05

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	10,1 - 10,3	0,5(0,7)			25 ± 0,1
225	5,9-6,1	1,5 - 1,9	0,2(0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 16	100	min. 7,4	150	0 -1,0
ca. 61	10,8	1240-1250					225	5,9- 6,1	500	3,4-3,9
	4,0	1360-1390							850	5,4-5,8
	1500	0 - 1,0					410-470 = 2,0		1200	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 101,0-103,0 (99,0-105,0)	1240-1250*	LDA 1200	0,9 bar 110,5-115,5 (108,0-118,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 85,0-89,0 (83,0-91,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

B5

D. Adjustment Test for Manifold Pressure Compensator

SCA 8,0 i 1

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3034 Z + RQV..PA 554	0,90	0 0,21	11,8 - 11,9 11,6 - 11,7 11,7 - 11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SCA 11,0 y 1

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 r 7
2. Edition
En

PE 6 P 110 A 720 RS 3040-1 RSV 350-1100 P 1/505
Komb.-Nr. 0 401 876 734

supersedes 12.83
company Scania
engine DS 11 05

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2 (2)	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	15,6-15,8	0,6 (0,8)			3,3 ± 0,1
350	4,4-4,6	1,8-2,2	0,2 (0,4)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 30	350	4,0	-	-
	x = 6,0						350	4,4 - 4,6		
							440-500	= 2,0		
ca. 66	12,1	1140-1150								
(2a)	4,0	1210-1240								
	1350	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	156,0-158,0 (154,0-160,0)	1140-1150*	700	156,5-161,5 (154,0-164,0)	100	240,0-290,0 = 20,0 - 21,0 mm RW	350	4,4-4,6

Checking values in brackets

* 1 mm less control rod travel than col 2

1 .85

BOSCH Geschäftsbereich KH, Kundendienst Kfz-Ausrüstung

B7

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 5.10.1983
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 3
1. Edition
En

PE 6 120 A 320 RS 3050 RQV 250-1100 PA 460 R
Komb.-Nr. 0 401 846 720
Values only apply to test nozzle-and-holder --- ---
assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Volvo
engine: TD 120 F
283 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	23,0-23,3	0,5(0,9)			2,5±0,1
250	3,6-3,8	1,8-2,3	0,5(0,7)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 8	100	min. 5,1	200	1,6-1,7
							250	3,6-3,8	500	3,1-3,4
ca. 60	11,8	1140-1150					300-360	=2,0	800	4,9-5,1
	4,0	1230-1260							1100	7,9
	1350	0 - 1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed ②b ④a rev/min 3	Fuel delivery characteristics high idle speed ⑤a ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1140-1150*	LDA	0 bar	-	-	-	-
700	230,0-233,0		700	138,0-142,0	250	18,0-23,0		
	(227,0-236,0)			(135,0-145,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

B9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P.. RS 3050 +RQV..PA 460 R	1,20	0 0,82 0,07	12,8-12,9 9,1-9,2 12,6-12,7 9,2-9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

NPP 001/4 SCA 11,0 s
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 720 RS3065 RQV 250-1100 PA468R
Komb.-Nr. 0 401 846 721

supersedes 5.83
company Scania
engine: DN 11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,30-3,40 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5±0,1	13,5 - 13,7	0,5(0,8)			2,5±0,1 (max.2,2-2,9)
225	5,8-6,0	0,9 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.10	100	min.7,3	200	0,3-1,3
							225	5,8-6,0	700	4,8-5,2
ca.6?	11,5	1140-1150					345-405	=2,0	1120	8,2
	1400	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (133,0-139,0)	1140-1150*	600	131,5-136,5 (129,0-139,0)	100	190,0-240,0	-	-
					225	15 - 19		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

B11

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 15,8 g

4. Edition

En

PE 10 P 110 A 920/5 LS 3073 RQ 300/1150 PA 535
Komb.-Nr. 0 401 849 702

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 9.83
company KHD
engine BF 10 L 413 F
265 kW/2050 min^{-1}
bzw. 259 kW/2300 min^{-1}
(Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesoil:SO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,0+0,1	14,4-14,6	0,4(0,75)			
300	6,9-7,1	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,9	550	20,0	9,8	1195-1210	300	7,0	100	min.8,4	1150	10,7-10,9
VH =	max. 46°			4,0	1220-1250			300	6,9-7,1	800	12,0-12,1
				1350	0-1,0			340-380	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0,75 mm

Speed regulation: At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 800	0,9 bar 144,0-146,0 (141,0-149,0)	-	LDA 500	0 bar 98,0-102,0 (95,0-105,0)	100	115,0-145,0 (111,0-149,0)

Checking values in brackets

1.85

B13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE10P..LS3073 + RQ..PA535	0,90	0 0,50 0,35	12,0-12,1 10,0-10,1 11,5-11,6 10,4-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 k

2. Edition

En

PE 6 P 120 A 320 RS 3118 RQV 250-1025 PA 657
Komb.-Nr. 0 401 846 772
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 2.83
company: Volvo
engine: TD 121 F
282 kW

TestoilISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	23,8-24,1	0,5(0,9)			2,5 ± 0,1
250	3,3-3,5	1,8-2,3	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 10	100	min.4,8	200	0,7-0,9
ca. 65	12,3	1065-1075					250	3,3-3,5	430	3,5-3,9
	4,0	1130-1160							660	
	1250	0-1,0					285-345=2,0		-	6,4-6,6
									945	7,6
									1025	
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1065-1075*	LDA	0 bar	100	240,0-280,0	-	-
700	238,0-241,0		700	138,0-142,0		= 20,0-21,0		
	(235,0-244,0)			(135,0-145,0)		mm RW		
					250	18,0-23,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

B15

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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D. Adjustment Test for Manifold Pressure Compensator

Test at n · 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3118 + RQV..PA 657	0,90	0 0,77 0,17	13,3 - 13,4 8,5 - 8,6 13,1 - 13,2 8,6 - 8,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B16

B16

En

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MB 14,6 k 2

1. Edition

En

PE 8 P 120 A 320 LS 3807-10 RQV 300-1150 PA 545-2
Komb.-Nr. 0 401 848 762

supersedes -
company: Daimler Benz
engine. OM 422 A
243 kW

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,3-15,5	0,5(0,9)			
300	5,2-5,4	1,2- 1,8	0,8(1,2)			
750	-					
500	-	C, Sp 4 u. 5	0,7(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca.17	100	min.6,7	300	1,6-1,8
							300	5,0-5,2	800	6,0-6,2
ca. 54	9,5	1190-1200					335-405= 2,0		1200	8,1-8,3
	4,0	1235-1265							1260	9,9
	1350	0-1,0								

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	1150	10,5+0,1
1150	153,0-155,0		750	169,0-172,0		(136,0-164,0)	750	11,1+0.2
	(150,0-158,0)			(166,0-175,0)				
			LDA	0 bar				
			500	139,0-141,0				
				(136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

B17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 8 P..LS 380-10 +RQV..PA 545-2	0		10,3-10,4
		0,45	10,4-10,5
		0,50	10,8-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 84
company Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 705

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC Zyl. 10;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	12,4 - 12,6	0,4 (0,8)			
300	7,9-8,1	1,2 - 2,0	0,4 (0,7)			
600 900	-	C, Sp. 4 u.5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 430-470	min. 9,5 7,9-8,1 = 2,0	1150 600 900	11,1+0,1 11,7+0,2 11,6+0,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation Δ 1190 - 1205 min^{-1}

1 mm less control rod travel

C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1150	124,0-126,0 (121,5-128,5)	-	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)
			900	118,0-123,0 (115,0-126,0)		

Checking values in brackets

1,85

B19

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 18,3 d 1
3. Edition
En

PE 10 P 110 A 320 LS 3818-1   RQV 350-1150 PA 678
1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 9.83
company: Daimler-Benz
engine OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 709

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			
600 900	-	C, Sp. 4 u.5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel (1a) mm rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.14	100	min.10,2	300	1,2-1,4
ca. 64	11,0	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1240-1270							870	5,2-5,6
	1400	0-1,0				350-500			1150	7,8
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed (2b) limitation intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	150,0-170,0 (146,0-174,0)	1150 600	12,0+0,1 12,7+0,1
1150	92,0-94,0 (89,0-97,0) **		900	118,0-123,0 (115,0-126,0)			900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

B20

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

B20

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 2

1. Edition

En

PE 10 P 110 A 320 LS 3818-11 RQV 350-1150 PA 678
Komb.-Nr. 0 401 849 713

supersedes

company Daimler-Benz
engine: OM 423
261 kW

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min.10,2	300	1,2-1,4
ca. 64	11,0	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1240-1270							870	5,2-5,6
	1400	0-1,0				350-500			1150	7,8
						(3a)				

Torque control travel a = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,5-126,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,0+0,
							600	12,7+0,2
1150	92,0-94,0 (89,5-96,5) **		900	118,0-123,0 (115,0-126,0)			900	12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 2

2. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 1050 PA 634-1
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.83
company: Daimler-Benz
engine: OM 424 A
385 kW
Komb.-Nr. 0 401 840 715

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

1 688 150 413

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,9+0,1	18,1-18,3	0,5(0,9)			
300	5,5-5,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0	1050-1055 1090-1110	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1050-1055 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1000	181,0-183,0 (178,0-186,0)	-	-	-	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

1.85

B22

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 21,9 a 6

1. Edition

En

PE 12 P 120 A 320 LS 3819   RQ 900 PA 634-2

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5 ° (±0,75°)

supersedes

company: Daimler-Benz

engine: OM 424 A
374 kW

Komb.-Nr.
0 401 840 704

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,8+0,1	18,3-18,5	0,5(0,8)			
300	5,2-5,4	1,2-2,0	0,8(1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in ______.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	10,8	900-905	-	-	-	-	-	-
				4,0	932-942						
				1050	max.1,0						

Torque-control travel on flyweight assembly dimension a = mm   Speed regulation: At 900-905 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	cm³/1000 strokes / Control rod travel mm 7
850	183,0-185,0 (180,0-188,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

1.85

B23

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

PE 12 P 120 A 320 LS 3819-1 RQ 750 PA 635

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company Daimler-Benz

engine: OM 424 A
316 kW

Komb.-Nr. 0 401 840 720

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,3-19,5	0,5(0,8)			
300	4,9-5,1	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0	750-755 780-790	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	193,0-195,0 (190,0-198,0	-	-	-	100	160,0-180,0 156,0-184,0)

Checking values in brackets

.1.85

B24

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 21,9 b 2

1. Edition

En

PE 12 P 120 A 320 LS 3819-1 RQV 350-1150 PA 493-3

supersedes

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

company Daimler-Benz

engine OM 424 LA

Komb.Nr. 0 401 840 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC); RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	18,0-18,2	0,5(0,9)			
350	4,8-5,0	1,4-2,0	0,8(1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 12	100	min.6,2	350	2,2-2,3
							350	4,5-4,7	510	3,2-3,5
ca. 65	11,1	1190-1200							1150	7,5-8,8
	4,0	1240-1270							1200	9,0
	1350	0-1,0				400-600				
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200*	LDA 650	0,7 bar 179,0-185,0 (176,0-188,0)	100	150,0-170,0 (146,0-174,0)	-	-
LDA 1150 **	0,7 bar 134,0-138,0 (131,0-141,0)		LDA 500	0 bar 131,0-133,0 (128,0-136,0)	350	4,5-4,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel - diminution difference mm (1)
PE12P..LS3819-1 + RQV..PA493-3	0,70	0 0,54 0,47	12,1-12,2 10,1-10,3 11,4-11,5 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

C2

C2
En

② **# Test Specifications Fuel Injection Pumps ② and Governors**

WPP 001/4 MB 21,9 d

3. Edition

En

PE 12 P 120 A 320 LS 3819-2 RQ 300/1050 PA 656
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

supersedes 11.83
company Daimler-Benz
engine OM 424 LA
441 kW
Komb.-Nr.0 401 840 713

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,7+0,1	19,6-19,8	0,5(0,9)			
300	5,5-5,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH =	19,1-20,8 max.46°	600	20,0	11,8 4,0 1300	1085-1095 1165-1195 0-1,0	300	5,6	100 300 360-400=2,0	min.6,0 5,5-5,7	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1085-1095 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 1050	0,8 bar 196,0-198,0 (193,0-201,0)	-	LDA 500	0 bar 141,0-143,0 (138,0-146,0)	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

C3

12.84

c3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 12 P..LS 3819-2 +RQ..PA 656	0	 0,49 0,59	10,7-10,8 11,2-11,4 12,0-12,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C4

En C4

Test Specifications Fuel Injection Pumps and Governors

WWP 001/4 BAO 15,9 b
1. Edition

En

PES 6P 120 A 320 RS 7105 RQV 400-750 PA 730-1
Komb.-Nr. 0 402 746 803
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company Baudouin
engine 6 P 15-2
450 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,6-3,7 (3,55-3,75) mm (from BDC); RW = 9,0 -12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,2+0,1	41,9-42,1	0,5 (0,9)			
400	4,5-4,7	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.25	11,2 4,0 900	750-755 776-789 0 - 1,0	-	-	-	ca. 8 (3a)	100 400	min. 6,1 4,5-4,7	400 420 - 700 750	1,1-2,0 2,0 4,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	419,0-421,0 (416,0-424,0)	750-755 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

C5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,6 g
2. Edition
En

Test oil ISO 4113

VE 6/11 F 1500 L 19-6 Overflow temperature 45° C

0 460 416 013

Setting of the pointer at a stroke af 1,0 mm in relation to outlet "A".

supersedes: 4.82
company: Volvo
engine: T AMD 40-A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04) mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	2,4-2,8	mm		
1.2 Supply-pump pressure	1200	4,7-5,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	69,5-70,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	350	18,0-22,0	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	1550	38,0-44,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min. 70	cm³/1000 strokes		
1.6 Start	--	--			
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1200	1500
	mm	0,8-1,6(0,5-1,9)	(1,9-3,3)	3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min	400		1500
	bar (kgf/cm²)	1,9-2,5		5,7-6,3
Overflow delivery	n = rev/min	600		1500
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1850	max. 2,0		
	1750	max. 3,0		
	1650	23,5-30,5	(22,5-31,5)	
	1550		(36,5-45,5)	
	1400		(67,4-72,6)	
	1200	67,0-69,0	(65,4-70,6)	
	600	53,5-58,5	(52,6-59,4)	
switch-off	1500	0		
Idle stop	580	max. 1,5		
	500	min. 1,5		
	350		(15,5-24,5)	
End stop	100	min. 70		
	120	min. 70		
	220	max. 70		

2.4 Solenoid — max. cut-in voltage xxx 10 V
xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,9-6,1
MS	1,4-1,6
SVS	max.2,3
AXK	18,7-20,7
BXL	7,8-11,1

Observations

C6

C6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,0 d

2. Edition

En

Testoil-ISO 4113

VE 4/9 F 2150 L 31-1 Overflow temperature 45° C supersedes 8.84

0 460 494 133 company: Motori VM

engine: HR 488 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1900	6,4-6,8	mm	0,8	
1.2 Supply-pump pressure	1900	5,7-6,3	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1600	46,5-47,5	cm³/1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	600	31,5-32,5	cm³/1000 strokes	0	
1.4 Idle regulation	400	8,0-12,0	cm³/1000 strokes	0	3,0
1.5 Full-speed regulation	2300	27,5-33,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 44,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1900	2150
	mm	1,3-2,1(1,0-2,4)	(5,9-7,3)	7,5-8,3(7,2 -8,6)
2.2 Supply pump	n = rev/min	400		2150
	bar (kgf/cm²)	2,0-2,6		6,3-6,9
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	42-83(27-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 2,0		0,8
	2450	max. 10,0		0,8
	2300		(26,5-34,5)	0,8
	2150	40,0-43,0	(39,2-43,8)	0,8
	1600		(44,7-49,3)	0,8
	600 *	39,3-41,3	(37,6-42,0)	0,27
	600		(29,8-34,2)	0
switch-off				
Idle stop	800	max. 2,0		
	500	max. 6,0		
	400		(6,0-14,0)	
End stop	350	min. 44		
	450	max. 43		

2.4 Solenoid: max. cut-in voltage xxx min. 10 V; test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,3
KF	5,7-5,9
MS	0,7-0,9
SVS	5,6
A	
B	

Observations

* Manifold-pressure compensator stroke = 3,8 mm

C7

C7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,5 a

2. Edition

En

Testöl-ISO 4113

VE 4/9 F 2250 R 84
0 460 494 079

Overflow temperature 45° C

superseded 12.83
company Peugeot
engine XD 3

Test pressure line
DHK: 1 688 901 022/130 bar 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,4-5,8	mm		
1.2 Supply-pump pressure	1500	5,6-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	38,9-39,9	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	400	6,0-10,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2325	25,5-31,5	cm³/1000 strokes		
1.6 Start	100	min. 45	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1500	2000
	mm	0,6-1,4(0,3-1,7)	2,5-3,1(2,1-3,5)	(4,9-6,3)	8,1-8,9(7,8-9,2)
2.2 Supply pump	n = rev/min	400		2200	
	bar (kgf/cm²)	2,1-2,7		7,5-8,1	
Overflow delivery	n = rev/min	400		2250	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 2,0		
	2450	4,5-12,5	(4,5-12,5)	
	2325		(24,5-32,5)	
	2200	40,9-42,9	(39,6-44,2)	
	2000	40,2-42,2	(38,9-43,5)	
	1500		(37,1-41,7)	
	1000	38,2-40,8	(37,2-41,8)	
	600	36,8-39,8	(35,3-41,3)	
switch-off				
Idle stop	400		(4,0-12,0)	
	440	max. 2,0		
End stop	350	min. 45		
	450	max. 45		

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	K 1
KF	5,2-5,4
MS	0,9-1,2
SVS	3,3
A	
B	

Observations

C8

⑥ # Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 IBE 4,0 b

1. Edition

Testöl-ISO 4113

VE 4/12 F 1300 R 103-1
0 460 424 017
DHK: 1 688 901 020

Overflow temperature 45° C

supersedes
company: Iberica
engine: T 4.236

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	4,0-4,4	mm	0,8	
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	800	94,0-95,0	cm³/1000 strokes	0,8	4,0
Full-load delivery without charge-air pressure	500	66,0-67,0	cm³/1000 strokes	0	
1.4 Idle regulation	300	6,0-12,0	cm³/1000 strokes	0	3,5
1.5 Full-speed regulation	1400	64,0-72,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 70	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	500	1000	1300
	mm	0,4-1,2 (0,1-1,5)	(3,5-4,9)	5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	500	1300	
	bar (kgf/cm²)	3,3-3,9	6,7-7,3	
Overflow delivery	n = rev/min	500	1300	
	cm³/10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1640	max. 1,0		0,8
	1580	max. 5,0		0,8
	1400		(63-73)	0,8
	1300	84,5-87,5	(83,0-89,0)	0,8
	800		(91,5-97,5)	0,8
	800*	91,0-92,0	(88,5-94,5)	0,42
	500		(62,8-70,2)	0
switch-off				
Idle stop	430	max. 1,0		
	370	max. 3,0		
	300		(4,0-14,0)	
End stop	110	min. 70		
	210	max. 70		

2.4 Solenoid: max. cut-in voltage xxxx min. 10 V; test voltage xxxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,1-1,3
SVS	5,0
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,2 mm

C9

BOSCH

1.85

C9

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 SOF 2,5 L

1. Edition

Testöl-ISO 4113

VE 4/10 F 2050 R 124-1

0 460 404 041

Overflow temperature 45° C

supersedes:
company: Iveco-Sofim
engine: 8144.81.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/. .

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,3-5,7	mm	0,8	
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	54,0-55,0	cm³/1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	600	43,5-44,5	cm³/1000 strokes	0	
1.4 Idle regulation	350	12,5-16,5	cm³/1000 strokes	0	3,0
1.5 Full-speed regulation	2250	37,0-43,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 60	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	-		0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	600	1500	2050
	mm	0,9-1,7 (0,6-2,0)	(4,8-6,2)	7,6-8,4 (7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	400	600	2050
	bar (kgf/cm²)	3,4-4,0	4,0-4,6	7,4-8,0
Overflow delivery	n = rev/min	600	2050	
	cm³/10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2430	max. 2,0		0,8
	2350	12,0-19,0	(11,0-20,0)	0,8
	2300	26,5-32,5	(25,0-34,0)	0,8
	2250		(35,5-44,5)	0,8
	2050	46,5-49,5	(45,3-50,7)	0,8
	1500		(51,8-57,2)	0,8
	700	47,0-48,0	(44,8-50,2)	0,22
	600		(41,3-46,7)	0
switch-off				
Idle stop	500	max. 3,0		
	450	min. 1,0		
	350		(10,0-19,0)	
End stop	350	min. 55		
	450	max. 55		

2.4 Solenoid	max. cut-in voltage	xxxx min, 10 V
	test voltage xxxx	rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-6,0
MS	1,2-1,4
SVS	2,8
A	
B	

Observations

* Manifold-pressure compensator stroke = 2,8 mm

C10

BOSCH

C10

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 k
3. Edition

En

Testöl-ISO 4113

VE 4/9 F 2075 R 126
0 460 494 121
DHK: 1 688 901 022/130 bar

Overflow temperature 45° C
Test pressure line
6x2x450/1 680 750 073 }

supersedes 3.84
company: Peugeot
engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting — mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8 - 6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6 - 6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7	cm³/1000 strokes	0,8	(2,5 (3,0)
Full-load delivery without charge-air pressure	500	41,3-42,3	cm³/1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	26,5-32,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 67,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	750	1000	1500	2000
	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump LDA=0,8 bar	n = rev/min	200	750	2000	
	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 1,0		0,8
	2300		(25,5-33,5)	0,8
	2200	39,5-45,5	(38,5-46,5)	0,8
	2000	52,2-54,2	(50,9-55,5)	0,8
	1500		(51,9-56,5)	0,8
	1000	51,8-54,8	(51,0-55,6)	0,8
	750*	46,8-47,8	(45,0-49,6)	0,25
	500		(39,5-44,1)	0
switch-off				
elektr.	400	0		
Idle stop	500	max. 1,0		
	400	8,0-12,0	(6,0-14,0)	
	350		(18,0-26,0)	
End stop	230	min. 60		
	330	max. 60		

2.4 Solenoid — max. cut-in voltage xx min. 10 V
xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	K 1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

CAA

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 k 3

2. Edition

En

Test-oil-ISO 4113

VE 4/9 F 2075 R 126-1

0 460 494 123

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

Test pressure line
6x2x450/1 680 750 073

supersedes II.84
company: Peugeot
engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8-6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7	cm³/1000 strokes	0,8	(2,5 (3,0)
Full-load delivery without charge-air pressure	500	41,3-42,3	cm³/1000 strokes	0	
1.4 Idle regulation	400	17,0-21,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2350	26,5-32,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 67,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA=0,8 bar	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA=0,8 bar	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 1,0		0,8
	2350		(25,5-33,5)	0,8
	2250	38,5-44,5	(37,5-45.5)	0,8
	2000	52,2-54,2	(50,9-55,5)	0,8
	1500		(51,9-56,5)	0,8
	1000	51,8-54,8	(50,3-56,3)	0,8
	750*	46,8-47,8	(45,0-49,6)	0,25
	500		(39,5-44,1	0
switch-off				
elektr.	400	0		
Idle stop	400		(15,0-23,0)	
	450	5,0 - 9,0	(3,0-11,0)	
	550	max. 3,5		
End stop	230	min. 60		
	330	max. 60		

2.4 Solenoid — max. cut-in voltage

test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. ( )

C12

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 k 1
2. Edition

En

Test ISO 4113

VE 4/9 F 2075 R 126-2 Overflow temperature 45° C

0 460 494 155

DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450/1 680 750 073

supersedes: 3.84
company: Peugeot
engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8-6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	41,3-42,3	cm³/1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	26,5-32,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 67,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	750	1000	1500	2000
	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump LDA=0,8 bar	n = rev/min	200	750	2000	
	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500	2075		
	cm³/10 s	55-138 (40-153)	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 1,0		0,8
	2300		(25,5-33,5)	0,8
	2200	39,5-45,5	(38,5-46,5)	0,8
	2000	52,2-54,2	(50,9-55,5)	0,8
	1500		(51,9-56,5)	0,8
	1000	51,8-54,8	(50,3-56,3)	0,8
	750*	46,8-47,8	(45,0-49,6)	0,25
	500		(39,5-44,1	0
switch-off elektr.	400	0		
Idle stop	500	max. 1,0		
	400	8,0-12,0 (6,0-14,0)		
	350	(18,0-26,0)		
End stop	230	min. 60		
End stop	330	max. 60		

2.4 Solenoid	
max. cut-in voltage	xxx min 22,0 V
test voltage	xxxxxxxxx Nennspannung 24,0 V

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

Pulling electro-magnet 24 V

C13

BOSCH

C43

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 V 9

4. Edition

En

05.84

Testöl-ISO 4113

VE 4/9 F 2400 R 138

0 460 494 131

Overflow temperature 45° C

supersedes:
company: VWW
engine: 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9-3,3	mm		
1.2 Supply-pump pressure	1500	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	32,7-33,7	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 35	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1 (1,0-2,4)	(2,4-3,8)	6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,2-2,8		6,4-7,0
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,5-29,5	(26,3-30,7)	
	1500		(30,9-35,5)	
	600	21,7-24,7	(20,2-26,2)	
switch-off				
elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	650	max. 7,5		
	1200	max. 5,0		
End stop	400	min. 18,0		
	500	max. 23,5		

2.4 Solenoid	max. cut-in voltage	xxx min. 10,0 V
	test voltage	xxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
* FH	1,8-2,4
A	
B	

Observations

*operating stroke (KSB)

C14

C14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 2
3. Edition
En

Test-ISO 4113

VE 4/9 F 2400 R 138-1 Overflow temperature 45° C

0 460 494 140

supersedes 12.83
company: VWW
engine: 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,9-3,3	mm		
1.2 Supply-pump pressure	1500	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	32,7-33,7	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	450	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 35	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1 (1,0-2,4)	(2,4-3,8)	6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,2-2,8		6,4-7,0
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,5-29,5	(26,3-30,7)	
	1500		(30,9-35,5)	
	600	21,7-24,7	(20,2-26,2)	
switch-off .				
mech.	2400	0		
elektr.	400	0		
Idle stop	450		(4,0-12,0)	
	650	max. 5,0		
	1200	max. 7,0		
End stop	400	min. 18,0		
	500	max. 23,5		

2.4 Solenoid	max. cut-in voltage	xxx min.. 10 V
	test voltage	rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

Observations

*operating stroke (KSB)

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

C15

Testoil-ISO 4113

VE 6/10 F 2150 L 151 **Overflow temperature 45° C**

0 460 406 039

supersedes company: VWW engine: 087

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,0-29,0	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.4 Idle regulation	2400	9,0-15,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min. 35	cm³/1000 strokes		
1.6 Start	-				
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2150
	mm	0,7-1,5 (0,4-1,8)	(2,3-3,7)	4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min	600		2150
	bar (kgf/cm²)	3,0-3,6		7,3-7,9
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0		
	2400		(8,0-16,0)	
	2150	24,0-26,0	(22,7-27,3)	
	1500		(26,3-30,7)	
	750	25,0-28,0	(23,5-29,5)	
switch-off elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 20,0		
	500	max. 28,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V; test voltage rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max.2,6
*FH	1,8-2,4
A	
B	

Observations

* *operating stroke (KSB)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3 h
2. Edition
10.84

En

Testoil-ISO 4113

VE 4/10 F 2100 L 156 — Overflow temperature 45° C

0 460 404 037

supersedes company: Opel
engine: 2,3 TD

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,1-5,5	mm	0,8	
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1200	58,5-59,5	cm³/1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	290	13,5-17,5	cm³/1000 strokes	0	3,0
1.5 Full-speed regulation	2425	15,0-21,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 48,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500			0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1200	1500	2100
	mm	1,5-2,3(1,2-2,6)	3,4-4,0(3,0-4,4)	(4,6-6,0)	7,9-8,7(7,6-9,0)
2.2 Supply pump	n = rev/min	500	1200	2100	
	bar (kgf/cm²)	2,7-3,3 (0 bar)	4,4-5,0(0,8 bar)	6,4-7,0 (0,8 bar)	
Overflow delivery	n = rev/min	500(0 bar)		2100 (0,8 bar)	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 6,0		0,8
	2425		(13,5-22,5)	0,8
	2300	28,5-35,5	(27,5-36,5)	0,8
	2100	46,3-48,7	(44,8-50,1)	0,8
	1200		(56,3-61,6)	0,8
	800*	43,5-44,5	(41,3-46,6)	0,3
	500		(33,1-39,9)	0
switch-off	2100			
Idle stop	380	max. 2,5		
	320	7,0-13,0	(5,5-14,5)	
	290		(11,0-20,0)	
End stop	250	min. 50,0		
	400	max. 47,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max.3,0
*FH	1,8-2,4
A	
B	

Observations
Manifold-pressure compensator stroke = 6,2 mm
Correction at the adjusting nut. (46)
*operating stroke (KSB)

C17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 2,7 a

2. Edition

En

03.84

Testoil-ISO 4113

VE 3/11 F 1250 L 163-1

0 460 413 002

DHK: 1 688 901 020

Overflow temperature 45° C

superseded company: Fiat-Iveco

engine: 8035.06.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	2,8-3,2	mm		
1.2 Supply-pump pressure	1000	4,7-5,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	64,5-65,5	cm³/1000 strokes		3,5 (4,0)
1.4 Idle regulation	400	15,5-19,5	cm³/1000 strokes		3,5 (4,0)
1.5 Full-speed regulation	1400	6,5-13,5	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1000	1250
	mm	1,1-1,9 (0,8-2,2)	(2,3-3,7)	4,4-5,2 (4,1-5,5)
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	2,0-2,6		5,8-6,4
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1450	max. 1,0		
	1400		(5,5-14,5)	
	1350	37,0-43,0	(35,5-44,5)	
	1250	61,5-64,5	(60,3-65,7)	
	1000		(62,3-67,7)	
	500	53,5-56,5	(51,6-58,4)	
switch-off				
Idle stop	475	max. 1,0		
	425	min. 5,0		
	400		(13,0-22,0)	
End stop	150	min. 90,0		
	250	max. 50,0		

2.4 Solenoid	max. cut-in voltage	xxx min. 10 V
	test voltage	xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	-
KF	5,1-5,3
MS	1,5-1,7
SVS	4,3
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,2 d
1. Edition
En

Test-ISO 4113

VE 4/10 F 2100 L 168-1 **Overflow temperature 45° C**
0460 404 042

supersedes company engine: Motori VM HR 492 HJ

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1 500	4,6- 5,0	mm	0,8	
1.2 Supply-pump pressure	1 500	4,8- 5,4	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1 500	58,7-59,7	cm³/1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	600	38,8-39,8	cm³/1000 strokes	0	
1.4 Idle regulation	400	13,0-17,0	cm³/1000 strokes	0	3,0
1.5 Full-speed regulation	2 300	27,0-33,0	cm³/1000 strokes	0,8	
1.6 Start	100	40-60	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1 500			0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	1 000	1 500	2 100
	mm	1,6-2,4(1,3-2,7)	(4,1-5,5)	7,6-8,4(7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	400		2 100
	bar (kgf/cm²)	1,1-1,7		6,9-7,5
Overflow delivery	n = rev/min			2 100
	cm³/10 s			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2 450	1,5- 8,5 (0,5- 9,5)	0,8
	2 300	(25,5-34,5)	0,8
	2 100	49,5-52,5(46,5-55,5)	0,8
	1 500	(56,5-61,9)	0,8
	700*	50,3-51,3(48,1-53,5)	0,4
	600	(36,6-42,0)	0
	600	61,2-64,2(59,3-66,1)	0,8
switch-off			
Idle stop	400	(10,5-19,5)	
	450	2,5- 8,5 (1,0-10,0)	
	600	max. 2,0	
End stop	400	43 -63	
	500	max. 44	

2.4 Solenoid

max. cut-in voltage XXX min. 10 V
test voltage XXXXXXXXXX rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	0,7-0,9
SVS	
A	
B	

Observations

* Manifold-pressure compensator stroke = 6,1 mm

C19

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 CUM 5,9 L
1. Edition

Testoil-ISO 4113

VE 6/12 F 1050 R 173-3 Overflow temperature 45° C
0460 426 058
DHK: 1688 901 016 / 207 + 3 bar

supersedes:
company: Cummins
engine: 6 BTA 59

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/. .

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	900	2,0- 2,4	mm	0,75	
1.2 Supply-pump pressure	900	4,1- 4,7	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	750	91,0-92,0	cm³/1000 strokes	0,75	
Full-load delivery without charge-air pressure	500	66,0-67,0	cm³/1000 strokes	0	
1.4 Idle regulation	375	18,0-24,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	1 100	53,0-61,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 97	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	750	900	1 050
	mm	1,3-2,1(1,0-2,4)	(1,5-2,9)	2,6-3,4(2,3-3,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min	200	750	1 050
	bar (kgf/cm²)	1,1-1,7	3,6-4,2	4,8-5,4
Overflow delivery	n = rev/min	500		1 050
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1 150	max. 15	0,75
	1 100	(52,0- 62,0)	0,75
	1 050	78,5-81,5(77,0- 83,0)	0,75
	900	85,5-88,5(84,0- 90,0)	0,75
	750	(88,5-94,5)	0,75
	600*	82,5- 83,5(80,0- 86,0)	0,40
	500	102,0-106,0(100,6-107,7)	0,75
	500	(63,5- 69,5)	0
switch-off elektr.	375	0	
Idle stop	300	49,0- 57,0(48,0- 58,0)	
	375	(16,0- 26,0)	
	450	max. 1,5	
End stop	130	min. 85	
	230	max. 85	

2.4 Solenoid — max. cut-in voltage XXX min. 10 V
XXXXXXXXX rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

* Manifold-pressure compensator stroke = 6,2 mm

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 PEU 2,1 f

1. Edition

Testöl-ISO 4113

VE 4/9 F 2250 R 174
0 460 494 154
DHK: 1 6 88 901 022 / 130+ 3 bar
Test pressure line
6x2x450/1 680 750 073

Overflow temperature 45° C

supersedes: -
company: PSA-Mahindra
engine: XD 4/90

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/. .

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm		
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0	cm³/1000 strokes		2,5
1.4 Idle regulation	350	7,0-11,0	cm³/1000 strokes		2,0
1.5 Full-speed regulation	2400	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 50	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2200
	mm	1,6-2,4 (1,3-2,7)	(3,3-4,7)	6,4-7,2 (6,1-7,5)
2.2 Supply pump	n = rev/min	400	2200	
	bar (kgf/cm²)	2,0-2,6	7,4-8,0	
Overflow delivery	n = rev/min		2250	
	cm³/10 s		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max. 4,0	
	2400	(10,0-18,0)	
	2350	21,0-27,0 (20,0-28,0)	
	2200	34,0-37,0 (32,8-38,2)	
	2000	33,5-36,5 (32,3-37,7)	
	1500	(28,8-34,2)	
	1000	29,7-32,7 (28,2-34,2)	
	500	30,0-33,0 (28,5-34,5)	
switch-off			
Idle stop	350	(5,0-13,0)	
	400	max. 4,0	
	550	max. 1,0	
End stop	350	min 40	
	450	min. 44	

2.4 Solenoid	
max. cut-in voltage	xxxx min. 10 V
test voltage xxxxxxxxx	rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	2,5
A	
B	

Observations

BOSCH

1.85

c21

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,5 c
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2125 R 180-1
0460 494 159
DHK: 1688 901 022/130 + 3 bar

Overflow temperature 45° C

Test pressure line
6x2x450/1 680 750 073

superseded
company PSA-Peugeot
engine: XD 3T-US

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,3-5,7	mm	0,8	
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	42,0-43,0	cm³/1000 strokes	0	
1.4 Idle regulation	430	7,0-11,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2350	31,0-37,0	cm³/1000 strokes	0,8	
1.6 Start	100	min.65	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	–		0,8	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	750	1500	2000
	mm	0,9-1,7 (0,6-2,0)	(4,8-6,2)	7,9-8,7 (7,6-9,0)
2.2 Supply pump LDA=0,8 bar	n = rev/min	200	750	2000
	bar (kgf/cm²)	1,1-1,7	3,1-3,7	6,6-7,2
Overflow delivery	n = rev/min	500 (0 bar)	2125 (0,8 bar)	
	cm³/10 s	55-138 (40-153	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 3,0		
	2350		(30,0-38,0)	0,8
	2250	42,0-50,0	(42,0-50,0)	0,8
	2000	53,5-56,5	(52,4-57,6)	0,8
	1500		(54,9-60,1)	0,8
	1000	54,0-57,0	(52,5-58,5)	0,8
	750*	49,0-50,0	(46,9-52,1)	0,3
	500		(39,9-45,1)	0
switch-off				
Idle stop	430		(5,0-13,0)	
	530	max. 3,0		
End stop	260	min. 60		
	360	max. 60		

2.4 Solenoid — max. cut-in voltage xxxx 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	1,2-1,4
SVS	4,6
A	
B	

Observations

* Manifold-pressure compensator stroke = 7,5 mm

C22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 10
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2400 R 185
0 460 494 161

Overflow temperature 45° C

supersedes -
company: VW
engine: 086 - 1,6 Lit
Jetta/Rabbit-USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,4-2,8	mm		
1.2 Supply-pump pressure	1250	3,7-4,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	31,5-32,5	cm³/1000 strokes		max. 2,5
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 35	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1250	2400
	mm	0,8-1,6 (0,5-1,9)	(1,9-3,3)	7,4-8,2 (7,1-8,5)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,2-2,8		6,4-7,0
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,0-29,0	(25,4-30,6)	
	1500		(29,4-34,6)	
	600	20,5-23,5	(19,0-25,0)	
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	650	max. 6,5		
End stop	1200	max. 5,0		
	400	min. 17		
	500	max. 22,5		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,7
A	
B	

Observations

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 9
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 186
0 460 494 162

Overflow temperature 45° C

supersedes
company VW
engine: 086 T - 1,6 Lit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,9-3,3	mm	0,75	
1.2 Supply-pump pressure	1250	4,0-4,6	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	22,5-23,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	max. 2,5
1.5 Full-speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1250			0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1250	2250
	mm	1,8-2,6 (1,5-2,9)	(2,4-3,8)	6,1-6,9 (5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		2250
	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,0-40,0	(36,4-41,6)	0,75
	1500		(41,4-46,6)	0,75
	1000*	33,0-34,0	(30,9-36,1)	0,30
	600		(20,4-25,6)	0
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1250	max. 4,0		
End stop	400	min. 21		
	500	max. 29		

2.4 Solenoid — max. cut-in voltage xxxx min. 10 V; test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	3,7
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,5 mm

C24

C24

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 s 8
1. Edition
En

PES 6 A 90 D 410 RS 2293 RSV 350-1400 A0C 2002 L
Komb.-Nr. 0 400 876 265

supersedes
company Daimler-Benz
engine OM 352
95,6 kW

Test-oil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,2-6,3	0,3(0,45)			
350	7,1-7,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 31	350	6,7	-	-
	x = 4,0						100	min.19,0		
ca. 63 (2a)	9,0	1420-1430					350	7,1-7,3		
	4,0	1505-1535					560-620	= 2,0		
	1600	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1380	61,5-62,5	1420-1430*	-	-	100	14,2-14,8 mm RW	350	7,2
					1517	3,6-4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

D1

D1

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 11

1. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1100 A0C 2002-1 L

Komb.-Nr. 0 400 876 329

supersedes

company Daimler-Benz

engine OM 352
70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	9,1-9,2	4,8-4,9	0,3 (0,45)			
350	7,2-7,4	0,8-1,4	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 30	350	7,3	1090	9,1-9,2
	x =						100	min.19,5	800	10,2-10,3
ca. 52	8,1	1130-1140					350	7,2-7,4	975	9,6-9,8
(2a)	4,0	1190-1220					550-610	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1090	48,0-49,0 (46,0-51,0)	1130-1140*	800	53,0-55,0 (50,5-57,5)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

D2

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MB 5,7 s 9

1. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1400 AOC 2053 L

Komb.-Nr. 0 400 876 280

supersedes

company Daimler-Benz

engine OM 352
82 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	9,0-9,1	5,1-5,2	0,3(0,45)			
350	7,4-7,6	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,7	-	-	-	ca. 29	350	7,0	1380	9,0-9,1
	x =								1100	9,4-9,6
							100	min.19,0	500	9,9-10,0
							350	7,4-7,6		
ca. 61	8,0	1420-1430					530-590	= 2,0		
(2a)	3,4	1455-1485					700	max. 1,0		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to .)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1380	51,0-52,0 (49,0-54,0)	1420-1430*	1000	55,5-58,5 (53,5-60,5)	100	73,0-83,0 (70,0-86,0)	-	-
			600	46,0-48,0 (44,0-50,0)		=14,0-14,5 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

D3

D3

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 q 7
2. Edition
En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1300 A O B 1101 DL
1101-2L
Komb.-Nr. 0 400 876 257 A O C 1101-2L

supersedes 3.84
company Daimler-Benz
engine OM 352
70 kW (95 PS)
Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,2-8,3	4,5 - 4,6	0,3(0,45)			
350	6,6-6,8	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-		350	6,7	1300	8,2-8,3
	x = 5,0								500	9,6-9,7
							100	min.19,0	700	9,3-9,5
ca.64	7,2	1340-1350					350	6,6-6,8	1100	8,5-8,8
(2a)	4,0	1395-1425					450-510	= 2,0		
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	44,5-45,5 (42,5-47,5)	1340-1350*	500	42,0-45,0 (40,0-47,0)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

D4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 g 2
5. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2294 RQV 300-1425 AB 740 L
Komb.-Nr. 0 400 844 047

supersedes 83
company Daimler-Benz
engine OM 314
62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3 - 6,4	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca.14	100	min.9,1	250	0,7-1,0
ca. 59	8,7	1455-1465					300	7,5-7,7	640	3,2-3,6
	4,0	1550-1580							1030	5,5-5,7
	1700	0 - 1,0							1425	8,1
						370-520 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1400	62,5 - 63,5 (60,5 - 65,5)	1455-1465 *	-	-	100	71,0-81,0 (68,0-84,0) = 13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

D5

D5

Test Specifications Fuel injection Pumps and Governors

WPP 001/4 MB 3,8 m

6. Edition

En

PES 4 A 90 D 410 RS 2294

RSV 350-750 A 0 B 764 L
..A 0 C 764 L
RSV 350-900A 0 B 764 L

superseded 9.82

company: Daimler-Benz

engine: OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
700	9,4-9,5	4,7- 4,8	0,3(0,45)			
350	6,7-6,9	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

350-750

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 23	350	6,3	-	-
	x =	3,75					350	6,2-6,4 **		
ca. 35 (5)	8,4	750-755								
	4,0	788-801								
	820	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
700	47,0-48,0 (45,0-50,0)	750-755 *	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

D6

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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The numbers denote the sequence of the tests

B. Governor Settings

350-900

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Control-lever deflection in degrees (7)	Lower rated speed: rev/min (8)	Control rod travel mm (9)	(3) Torque control: rev/min (10)	Control rod travel mm (11)
ca. 33	750 830 870	16,0 9,0 4,5	without auxiliary spring	ca. 20	350 100 350 370-430	7,0 min. 19 6,7-7,3 = 2,0	-	-
ca. 35 (2a)	895 - 905 930 - 945 1000	= 8,3 = 3,8 0,3 - 1,7	with auxiliary spring		450	0 - 1		

Testoil-ISO #113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
850	49,5-50,5 (47,5-52,5)	895-905*			100	14,7-15,3 mm RW	350	7,0

Checking values in brackets

* 1 mm less control rod travel than col 2

**| Set idle-speed auxiliary spring at 2 mm control-rod travel.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

D7

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 KHD 6,1 a
6. Edition
En

PES 6 A 85 D 410/3 RS 2366 RSV 325-1400 A8B 674D, 707D
.. RS 2415 A8C 674D
.. RS 2532 325-1150 A8B 674D, 707D

supersedes 4.84
company KHD
engine BF 6 L 913

Note page 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,4+0,1	8,4-8,5	0,3(0,45)			
325	6,6-6,8	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

C
RSV 325-1400 A 8 B 674 D, 707 D

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x =	0,7-1,0	-	-	-	ca. 21	325	6,2	500	13,7-13,8
									1000	13,3-13,5
							100	min.19,0	1400	12,4-12,5
ca.71	11,4	1440-1450					325	6,6-6,8
(2a)	4,0	1485-1515					585-645	= 2,0
	1620	0,3-1,7					700	max.1,0

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	17,6-18,2	325	6,7
Note	page 3		Note	page 3		mm RW		
		Note page 3	LDA	0 bar				
			500	60,0-63,0 (58,0-65,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D8

The numbers denote the sequence of the tests

B. Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1150	16,0	without auxiliary spring			ca. 21	325	5,5	1130	0
	1200	11,1								
	1250	5,4					200	19 - 21		
							325	5,5-5,8	500	1,0-1,2
(2a)	1220	7,5-10,4					500	1,4-3,4		
	1300	1,3-3,6					660	0 -1,5		
	1380	0,3-1,5	with auxiliary spring							

Testing 1-13

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ...) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	s.S.3	LDA	0,7 bar	100	119,5-129,5	325	5,5**
Instructions P.3			s. Seite 3					
			LDA 500	0 bar 57,5-59,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / ~~increasing~~ pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / ~~difference~~ mm ~~%~~
all governors	0,38	0,10	0,2 - 0,3 1,6 - 2,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

D9

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

BF 6 L 913 - PES 6 A D..RS2366, 2415 -F- oder B-Leistung bei .. min^{-1}

1400	88,0 - 90,0	1420	800	80,0 - 83,0	160 PS	/	n = 2800
1400	84,0 - 86,0	1420	800	66,0 - 69,0	142 PS	/	n = 2800
1325	90,5 - 92,5	1340	850	88,5 - 90,5	168 PS	/	n = 2650
1325	87,5 - 89,5	1340	800	82,5 - 85,5	160 PS	/	n = 2650
1325	82,5 - 84,5	1340	800	67,5 - 70,5	140 PS	/	n = 2650
1250	87,0 - 89,0	1270	800	84,5 - 87,5	160 PS	/	n = 2500
1250	83,0 - 85,0	1270	800	77,5 - 80,5	148 PS	/	n = 2500
1250	81,0 - 83,0	1270	800	75,5 - 77,5	140 PS	/	n = 2500
1200	86,0 - 88,0	1220	800	84,5 - 87,5	156 PS	/	n = 2400
1200	78,0 - 80,0	1220	800	68,0 - 71,0	135 PS	/	n = 2400
1165	84,0 - 86,0	1180	800	84,5 - 87,5	152 PS	/	n = 2330
1150	83,5 - 85,5	1165	800	84,5 - 87,5	152 PS	/	n = 2300
1150	80,0 - 82,0	1165	800	79,0 - 81,0	142 PS	/	n = 2300
1100	82,0 - 84,0	1115	800	84,5 - 87,5	147 PS	/	n = 2200
1075	82,0 - 84,0	1090	800	84,5 - 87,5	144 PS	/	n = 2150
1075	78,0 - 80,0	1090	800	76,0 - 79,0	136 PS	/	n = 2150
1050	76,5 - 78,5	1065	800	73,5 - 76,5	130 PS	/	n = 2100
1000	82,5 - 84,5	1015	800	84,5 - 87,5	137 PS	/	n = 2000
1000	77,0 - 79,0	1015	800	79,5 - 82,5	130 PS	/	n = 2000
900	82,0 - 84,0	910	800	84,5 - 87,5	125 PS	/	n = 1800
875	68,0 - 70,0	885	800	66,0 - 69,0	106 PS	/	n = 1750
750	85,0 - 87,0	760	-	-	105 PS	/	n = 1500
750	78,0 - 80,0	760	-	-	100 PS	/	n = 1500

PLEASE NOTE

1. ** With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 - 1.0 before the stop.

2. LDA adjustment to be carried out according to VDT-W-420/305.

3. Dimension H = 22.5 mm = basic setting of LDA.

Checking values in brackets

* 1 mm less control rod travel than col 2

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

En

WPP 001/4 KHD 19,0 g 1

1. Edition

PE 12 A 95 D 610 LS 2449 RQV 300-1200 AB 1105-1 L
Komb.Nr. 0 400 640 111

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5°(±0,75°)

supersedes -
company: KHD
engine: BF 12 L 413 F
326 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8-1,9 (1,75-1,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,0+0,1	10,9 - 11,1	0,35(0,6)			
300	6,4-6,6	1,1-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100 300	min. 8,0 6,4-6,6	250 650 1000 1275	0,6-0,9 4,2-4,4 6,3-6,5 9,0
ca. 67	10,0 4,5 1450	1240-1250 1300-1330 0 - 1,0				315-410 (3a)				

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 109,0-111,0 (107,0-113,0)	1240-1250 *	LDA 800 LDA 500	0,7 bar 109,5-112,5 (107,0-115,0) 0 bar 84,5-87,5 (82,5-89,5)	100	126,5-136,5 (123,5-139,5)	1200 500 9[illegible] 1045	1,0+0,1 1,3+0,1 1,2+0,2 1,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 12A..LS 2449 + RQV.. AB 1105-1L	0,70	0 0,32 0,22	11,2-11,3 10,4-10,5 10,9-11,0 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D12

En 212

Test Specifications Fuel Injection Pumps and Governors

40

WWP 001/4 MAN 9,2 f 1
1. Edition
En

PES 5 A 95 D 320 LS 2504 RQ 250/1100 AB 1197 R
Komb.-Nr. 0 400 845 079

supersedes
company: MAN
engine: D 2565 MUL
141 KW

1-3-5-4-2 je 72° ± 0,5° (± 0,75°)

Test-oil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 -1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 100	11,3+0,1	11,4-11,6	0,3(0,6)			
250	6,4-6,6	1,5-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,3	1145-1160	250	6,5	100	min. 8,0	100.	11,3-11,4
				4,0	1195-1225			250	6,4-6,6	600	11,7-11,8
				1300	0-1,0			370	410=2,0	940	11,5-11,7
										1015	11,4-11,6

Torque-control travel on flyweight assembly dimension a = 0,40 mm

Speed regulation: At 1145-1160 min -1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes; mm 7
1100	114,0-116,0 (112,0-118,0)	-	800	111,0-115,0 (109,0-117,0)	100	147,0-157,0 (144,0-160,0) = 13,7-14,3 mm RW
			500	108,5-112,5 (106,5-114,5	250	6,5 mm RW

Checking values in brackets

2.85

Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 OMB 4,6 b

1. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2518 RD 300/1400 AB 989 DL

Komb.-Nr. 0 400 844 073

supersedes -

company: OM Brescia

engine: 8340.04.200

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8+0,1	7,0 - 7,1	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1000	14,2-15,8	1000	15,0	9,8	1445-1460	300	6,0	100	min.7,5	1400	10,8-10,9
				4,0	1540-1570			300	5,9-6,1		
				1750	0 - 1,0			450-490	= 2,0	740	10,8-11,0
								600	max. 1,0	600	11,0-11,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1445-1460 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1400	69,5 - 70,5 (67,5 - 72,5)	500	900	64,5 - 67,5 (62,5 - 69,5)	100	117,0-123,0 (114,0-126,0) = 16,2-16,6 mm RW
			600	61,5 - 64,5 (59,0 - 67,0)		

Checking values in brackets

3.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 5
4. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2520 RQV 300 - 1425 AB 982 DL
Komb.-Nr. 0 400 846 401

supersedes 11.82
company Daimler Benz
engine OM 352 A
127 kW (172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,80-1,90 (1,75-1,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,5+0,1	7,9 - 8,0	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1425	16.0-19,4	-	-	-	ca.10	100	min.7,4	400	1,4-2,2
ca. 61	10,5	1440-1450					300	5,8-6,0	1425	8,1
	4,0	1560-1590					570-630	=2,0		
	1700	0 - 1,0					800	max.1,0		
						350-500 (3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel a = 0,1 (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 79,0 - 80,0 (77,0 - 82,0)	1440-1450*	LDA 600	0,5 bar 76,0 - 78,0 (74,0 - 80,0)	100	71,0-81,0 (68,0-84,0) = 14,0-14,6 mm RW	1400	11,5
							1200	11,8
800	82,0 - 84,0 (80,0 - 86,0)		LDA 500	0 bar 62,0 - 65,0 (60,0 - 67,0)			1000	12,1
							600	12,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

./.

3.85

D15

D15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 800 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
2520 + 982 DL	0,50		12,5 - 12,6
		0,13	12,2 - 12,3
		0,11	11,7 - 11,9
		0	11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D16

D16 En

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 4,1 c 1
2. Edition

En

PES 4 A 80 D 410/3 RS 2523 RSV 325-1400 A 8 B 540DL
Komb.-Nr. 0 400 864 044 A 8 C 540 L

supersedes 3.84
company KHD F 4 L 912
engine Einbau 2800

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,2+0,1	5,7-5,8	0,2(0,35)			
325	8,0-8,2	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca.19	325	7,6	1380	10,2-10,3
	x=						100	min.19,5	900	10,8-11,1
ca.67	9,2	1420-1430					325	8,0-8,2	500	11,4-11,5
(2a)	4,0	1450-1480					670 - 730	=2,0		
	1600	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1380	57,0-58,0 (55,5-59,5)	1420-1430*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

D17

D17

Test Specifications Fuel Injection Pumps and Governors

40

(1A)

WPP 001/4 KHD 4,1 c 4

En 1. Edition

PES 4 A 80 D 410/3 RS 2523 RSV 325-1400 A 8 C 1022 L

Komb.-Nr. 0 400 864 046

supersedes –
company KHD
engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2+0,1	5,7-5,8	0,2 (0,35)			
325	8,0-8,2	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 20	325	5,0	1400	10,2-10,3
	x =	3,5							900	10,8-11,1
							100	min.19,0	500	11,4-11,5
ca. 67	9,2	1440-1450					325	5,4-5,6		
(2a)	4,0	1470-1500					500-560	= 2,0		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1400	57,0-58,0 (55,5-59,5)	1440-1450*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

D18

D18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 i 1

6. Edition

En

6.85

PE 6 A 90 D 410 RS 2524 RSV 250-1200 A 5 B 2012 L
Komb.-Nr. 0 400 676 151
Specifications apply to test tubing 1 680 750 015

supersedes
company DAF
engine DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3-2,4 (2,25-2,45) mm (from BDC) RW = 7,5-10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,1-7,2	0,3 (0,45)			
250	6,5-6,7	0,9-1,5	0,2 (0,4)			

Port closing difference between control-rod travel 9 mm and max. = 4,5-5,5° camshaft

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 16	250	5,5	1000	9,4-9,5
	x = 3,0						250	5,9-6,1	400	9,4-9,6
							580-640	= 2,0	300	9,7-10,2
ca.49	8,4	1240-1250								
(2a)	4,0	1260-1290								
	1480	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	71,0-72,0 (69,0-74,0)	1240-1250*	-	-	100	128,0-138,0 (125,0-141,0)	250	6,6

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

D19

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 k 1

5. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2525, X, Y RSV 250-1200 A 5 B 2013 DL supersedes 5.84

company: DAF

engine: DN825 (X, Y) DHP/DHTD 825

See Service Information VDT-I-420/115

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,9 - 11,1	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			
		POrt closing difference between and max. = 3 - 4° camshaft		control.rod travel 9 mm		

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0 4,25	-	-	-	ca.21	250	5,6	1000	12,6+0,1
									400	12,8+0,2
							250	6,0-6,2	300	13,0+0,5
(5) ca.55	1230-1240=11,6 1330-1360=4,0 1490=0,3-1,7						595-665 = 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min o 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA	0,7 bar		LDA	0 bar	100	120,0-130,0	-	-
1000	108,5-110,5 (106,5-112,5)	1230-1240*	600	84,5 - 87,5 (82,0-90,0)		(117,0-133,0) = 19,5-21,0 mm RW		
X			X					
1000	90,5- 92,5	(12,0mmRW)	600	77,0 - 80,0				
Y			Y					
1000	99,0-101,0	(12,5mmRW)	600	77,0 - 80,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
2525 + 2013 DL	0,70	0,30 0,26 0	12,6 - 12,7 12,3 - 12,4 11,7 - 11,9 11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 9,2 i 2

2. Edition

tropicalized version

En

Testoil-ISO 4113

PES 5 A 95 D 410 LS 2543 RQ 250/1100 AB 1039 DL
Komb.-Nr. 0 400 845 044

1 - 3 - 5 - 4 - 2
0 -72 -144-216-288° ± 0,5° (± 0,75°)

supersedes 82
company: MAN
engine: D2565 M/MF
141 kW (192 PS)(1)
MAN-Nr. 1-7933
D 2565 MF-Tropen
134 kW/1500 min^{-1}
(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,1 - 11,2	0,3(0,6)			
250	5,9-6,1	1,4 - 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings (1)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	6,0	100	min. 7,5	1100	11,0+0,1
								250	5,9-6,1	965	11,1+0,3
1300	0 - 1,0			4,0	1185-1215			280-440	= 2,0	790	11,5+0,2
								500	0 - 1	550	11,8+0,2

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1100 (1)	111,0 - 112,0 (109,5 - 114,5)		750	106,5 - 110,5 (104,5 - 112,5)	100	150 - 160 bei 15,7 - 16,3 mm RW
			500	max. 111,5 (113,5)	250	6,0 mm RW

Checking values in brackets

1.85

D22

322

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B. Governor Settings (2)

Checking of slider PRG check ①		Full-load speed regulation Setting point ④		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point ⑤		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,0 4,0 1300	1145-1160 1185-1215 0-1,0	250	6,0	100 250 280-440=2,0 500	min.7,5 5,9-6,1 0-1,0	1100 965 790 550	11,0+0,1 11,1+0,3 11,5+0,2 11,8+0,2

Torque control travel on flyweight assembly dimension a = mm Speed regulation At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1100 (2)	108,0-110,0 (107,5-110,5)	-	750 500	104,0-108,0 (102,0-110,0) 103,0-109,0 (102,0-110,0)	100 250	150,0-160,0 = 15,7-16,3 mm RW 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point ⑤		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

(1) UPP 001/4 VOB 7,0 a

2. Edition En

PE 6 P 100 A 320 RS 256 RQV 250-1200 PA 212/2 R

supersedes: 7.74
compar. Volvo-BM
engine: D 70 B

Note sleeve position 36.0 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3-13,1	0,5			
600	9	5,2-6,2				
	12	11,1-12,4				
	15	16,6-18,2				
200	9	3,2-4,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1290	15,0-18,3	-	-	-	ca. 23	120	8,3-10,0	1290	8,2
	1560	0					250	6,2-8,2		
ca. 66	1200	15,1-18,2					350	3,3-5,4		
	1300	8,0-13,1					500	0 - 2,5		
	1400	0 - 7,3					570	0		
	1520	0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	73,0-75,0	1230-1240*	-	-	100	230,0-270,0	-	-
					225	10,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3. 85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D24

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 9,2 i 3
3. Edition
tropicalized version

En

PES 5 A 95 D 410 LS 2543 RQ 250/1100AB 1137-3 L

supersedes 7.84

company: MAN

engine: D 2565 MF (1)
141 kW/2200 min^{-1}
MAN-Nr. 2-7435

D 2565 MF-Tropen
134 kW/1500 min^{-1}
(2)

Komb.-Nr. 0 400 845 065

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 - 1,6 (1,45-1,65) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,2-11,3	0,3(0,6)			
250	6,9-7,1	1,4-1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	6,0	100	min. 7,5	100	1,0-11,1
				4,0	1185-1215			250	5,9-6,1	600	1,8-11,9
								355-395	=2,0	790	1,6-11,8
										955	1,1-11,4

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	111,5-112,5 (109,5-114,5)	-	750	106,5-110,5 (104,5-112,5)	100	150,0-160,0 (147,0-163,0) =15,7-16,3 mm RW
			500	max. 111,5 (max. 113,5)	250	6,0 mm RW

Checking values in brackets

1.85

E1

B. Governor Settings (2)

Checking of slider PRG check ①		Full load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,0 4,0 1300	1145-1160 1185-1215 0-1,0	250	6,0	100 250 280-440 500	min.7,5 5,9-6,1 = 2,0 0-1,0	1100 600 790 955	11,0+0,1 11,1+0,3 11,6+0,2 11,1+0,3

Torque-control travel on flyweight assembly dimension a ___ mm Speed regulation At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	Control rod travel cm³/1000 strokes / mm
1	2	3	4	5	6	7
1100 (2)	108,0-110,0 (107,5-110,5)	-	750 500	104,0-108,0 (102,0-110,0) 103,0-109,0 (102,0-110,0)	100 250	150,0-160,0 =15,7-16,3 mm RW 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = ___ mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	Control rod travel cm³/1000 strokes / mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103
RSF 375/2250 M 19
Komb.-Nr. 0 400 074 978 Sales model 0 400 074 977

supersedes .84
company Daimler-Benz
engine OM 615
44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 170-180 (1,65-1,85) mm (from BDC) 18,5-21,5 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	12,2$^{+0,1}$	3,2-3,3	0,25(0,3)			
375	6,4-6,6	0,65-0,75	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min. 12,0 max. 11,5	250 300		(7) 11,3-11,5	2200	(12)	100	min. 20,1
(2)	6,4-6,6	375	50 (8)	6,7-7,1	2500	(13)	1800	11,7-11,9
(3)	**	400	(9)	-	-	(14)	1000	12,2-12,3
(4)	-	-	(10)	0-1,0	2950			
(5)	2,0	720-820	(11)			(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	33,0-35,0 (33,0-36,0)	2500* RW 6,7-7,1	1800	33,0-35,0 (32,0-36,0)	100	min. 53,0	6,0 (12a)
			1000	32,0-33,0 (31,0-35,0)	375	6,5-7,5 (5,5-9,0)	1,0 1,5 (15)
					2500	13,0-17,0 (12,0-18,0)	2,5 siehe 3,0 Pkt. 8a (16)

Checking values in brackets

Ca. -3,5 mm less control rod travel than in Column 2 XXXXX

E3

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

E4

E4 En

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 h
3. Edition
En

PES 4 M 50 C 320 RS 103
RSF 375/2250 M 20
Komb.-Nr. 0 400 074 976
1-3-4-2=0 - 90-180-270 ±0,5 (0,75°)

Sales model
0 400 074 975

supersedes 12.82
company Daimler-Benz
engine OM 615
42,7 kW (58 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke: 1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel: 20 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	11,4+0,1	2,95-3,05	0,25(0,3)			
375	6,4-6,6	0,65-0,75	0,10(0,15)			

Set uniform delivery according to the values in ☐

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
13-17 (1)	min. 12,0	250	50 (7)	10,7-10,9	2200	(12)	100	min. 20,1
(2)	6,4-6,6	375	(8)	7,6-8,0	2500	(13)	1900	10,9-11,1
(3)	**	400	(9)	-	-	(14)	1000	11,4-11,5
(4)	-	-	(10)	0,0 -1,0	2950			
(5)	2,0	720-820	(11)	-	-	(6)	Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	31,5-33,5 (30,5-34,5)	2500* RW 7,6-8,0	1900	32,0-34,0 (31,0-35,0)	100	min. 55,0	6,0
			1000	29,5-30,5 (28,5-31,5)	375	6,5-7,5 (5,5-9,0)	1,0 (12a)
							1,5
					2500	17,0-21,0 (16,0-22,0)	2,5 See
							3,0 Point (15)
							8 a (16)

Checking values in brackets

3,0 less control rod travel than in Column 2

01.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Testöl-ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 4
Komb. Nr. 0 400 074 997

supersedes
company Daimler-Benz
engine OM 615
49 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) Control rod travel 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,0+0,1	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1 (0,15)			
1600			0,25(3,0)			
2300			0,25(3,0)			

Set uniform delivery according to the values in [ ] Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
11-15	①	min.11,0	250	50	⑦	12,4-12,6	2300	⑫	100	min.20,1
	②	max.10,5	300		⑧	9,5	2570	⑬	1600	12,7-12,9
	③	6,1-6,3	375		⑨			⑭	1000	13,0-13,1
	④	**	395		⑩	0-1,0	2950			
	⑤	-			⑪			⑥	Switching point	
		2,0	720-820							

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2300	38,5-40,5 (37,5-41,5)	2570 * RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min.53,0	6,0 ⑫a
					375	6,5-7,5 (6,0-8,0)	1,0 (1,5) ⑮
			1000	37,0-38,0 (36,0-39,0)			
					2570	15,0-21,0 (14,0-22,0)	6,0 (3,0) ⑯

Checking values in brackets

* 1mm less control rod travel than in Column 2

ca. 3,0 xxxx

01.85

E7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

E7

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1,5 mm

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47°. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30°. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

E8

E8 En

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 18
Komb.-Nr. 0 400 074 961 Sales model 0 400 074 958

1 - 3 - 4 - 2
0 - 90-180-270

supersedes 5.83
company Daimler-Benz
engine OM 616
53 kW (72) PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) Control rod travel 20 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,4$^{+0,1}$	3,9-4,0	0,25(0,30)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed				Upper rated speed				Variations in control rod travel			
Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6		Rotational speed rev/min 8	Control rod travel mm 9
9-13	①	min. 11,0	250	50	⑦	12,5-12,7	2200	⑫	100	min. 20,1
	②	max. 10,5	300		⑧	8,2- 8,6	2500	⑬	1800	12,8-13,0
	③	6,0-6,2	375		⑨	-	-	⑭	1000	13,4-13,5
	④	**	400		⑩	0-1,0	2950			
	⑤	-	-		⑪			⑥	Switching point	
		2,0	720-820							

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		Difference	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8	
2200	39,4-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	⑫a
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0	
							1,5	⑮
					2500	23,0-27,0 (22,0-28,0)	2,5 See	
							3,0 Point 8 a	⑯

Checking values in brackets ca. 4,2 less control rod travel than in Column 2

01.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1.4 - 1.5 mm

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{0}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{0}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 o 1

2. Edition

En

Testoil-ISO 4113

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 15
Komb.-Nr. 0 400 075 991 Sales model 0 400 075 989

supersede 5.83
company Daimler-Benz
engine OM 617 (65 KW)

1 - 2 - 4 - 5 - 3
0 - 72-144-216-288

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,4$^{+0,1}$	3,9-4,0	0,25(0,30)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
9-13	(1)	min.10,0	250	50	(7)	12.5-12,7	2200	(12)	100	min. 20,1
	(2)	max. 9,5	300		(8)	8,6-9,0	2500	(13)	1800	13,0-13,2
	(3)	6,0-6,2	350		(9)	-	-	(14)	1000	13,4-13,5
	(4)	**	385		(10)	0-1,0	2950			
	(5)	-	-		(11)			(6)	Switching point	
		2,0	720-820							

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0
					2500	23,0-27,0 (22,0-28,0)	1,5 (15)
							2,5 siehe Pkt. 8a (16)

Checking values in brackets

ca. 4,0 mm less control rod travel than in Column 2 XXXXX

E11

01.85

E11

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{o}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{o}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ROL 12,2 d

1. Edition

En

PE G P 120 A 320 RS 3129 RQV 250-975 PA 709

1-4-2-6-3-5 je 60° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

supersedes –

company: Rolls Royce

engine: Eagle III 204 kW

Komb.-Nr. 0 401 846 793

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Mark for end of pump delivery 7.5° before end of pump delivery, cyl. 1.

Port closing (ende) prestroke 5,7-5,8 (5,65-5,85) mm (from BDC); RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,7+0,1	20,6-20,8	0,5(0,9)			
250	5,6-5,8	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1040	15,2-17,8	–	–	–	ca. 16	100	min.7,1	200	
							250	5,6-5,8	450	
ca. 66	11,7	1015-1025							700	
	4,0	1105-1135							975	
	1250	0-1,0				355-415 (3a)				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	206,0-208,0 (203,0-211,0)	1015-1025*	500	188,0-194,0 (185,0-197,0)	100	200,0-220,0 (196,0-224,0)	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

E13

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 q
8. Edition
tropicalized version

En

PES 6 P 110 A 720 LS 375 RQ 250/1100 PA 335 DR

Komb.-Nrn. 0 402 046 179, 0 402 046 211,
0 402 046 175

supersedes 10.83
company: MAN
engine: D 2566 MT(F) (1)
206 kW (280 PS)
MAN-Nr.1-7979
D 2566 MTF-Troper
196 kW/1500 min⁻¹
(2)

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,4	1145-1160	250	7,4	100	min.8,9	1100	12,4-12,5
VH =	max. 46°			4,0	1190-1220			250	7,3-7,5	700	13,3-13,4
				1350	0-1,0			355-395	= 2,0	870	13,0-13,2
										970	12,5-12,8

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	-	LDA	0,2 bar	100	225,0-245,0
1100	147,0-149,0		500	123,0-127,0		(221,0-249,0)
	(143,5-151,5)			(120,0-130,0)		
LDA	0,7 bar		LDA	0 bar		
700	157,0-161,0		500	110,0-113,0		
	(154,0-164,0)			(107,5-115,5)		

Checking values in brackets

1.85

EA4

B Governor Settings

Checking of slider PRG check (1)		Full load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	11,4 4,0 1350	1145-1160 1190-1220 0 - 1,0	250	7,4	100 250 355-395	min. 8,9 7,3-7,5 = 2,0	1100 700 870 970	12,4-12,5 13,3-13,4 13,0-13,2 12,5-12,8

Torque-control travel on flyweight assembly dimension a: 0,2 mm

Speed regulation At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/- 1000 strokes	rev/min	rev/min	cm^3/- 1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(?) LDA 1100 LDA 700	 0,7 bar 139,0-141,0 (138,0-142,0) 0,7 bar 150,0-154,0 (147,0-157,0)	-	LDA 500 LDA 500	0,2 bar 115,0-119,0 (112,0-122,0) 0 bar 103,0-107,0 (101,0-111,0)	100	215,0-235,0 (211,0-239,0)

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P .. LS 375 + RQ .. PA 335 DR	0,70	 0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

E15

E45

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 19
3. Edition
tropicalized version

En

PES 6 P 110 A 720 LS 375 RQ 250/1100PA 658

Komb.-Nr. 0 402 046 251
0 402 046 253
0 402 046 297

supersedes 5.84
company: MAN
engine: D 2566 MT (F) (1)
206 kW (280 PS)
MAN-Nr. 2-7499
D 2566 MTF-Tropen
196 kW/1500 min⁻¹
(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH = max. 46°	19,2-20,8	600	20,0	11, 4,0 1350	1145-1160 1190-1220 0-1,0	250	7,4	100 250 355-395	min.8,9 7,3-7,5 = 2,0	1100 700 880 990	12,4-12,5 13,3-13,4 13,1-13,3 12,6-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-225,0 (211,0-229,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)		

Checking values in brackets

1.85

E16

B Governor Settings (2)

Checking of slider PRG check (1)		Full load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	11,4 4,0 1350	1145-1160 1190-1220 0-1,0	250	7,4	100 250 355-395	min. 8,9 7,3 - 7,5 = 2,0	1100 700 870 970	12,4-12,5 13,3-13,4 13,0-13,2 12,5-12,8

Torque-control travel on flyweight assembly dimension a 0,2 mm

Speed regulation At 1145-1160 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 °F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel cm^3/1000 strokes / mm
1	2	3	4	5	6	7
(2) LDA 1100 LDA 700	 0,7 bar 139,0-141,0 (138,0-142,0) 0,7 bar 150,0-154,0 (147,0-157,0)	-	LDA 500 LDA 500	0,2 bar 115,0-119,0 (112,0-122,0) 0 bar 103,0-107,0 (101,0-111,0)	100	215,0-235,0 (211,0-239,0)

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution / difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 375 + RQ..PA 335 DR	0,70	 0 0,20 0,32	13,3 - 13,4 11,3 - 11,4 11,8 - 11,9 12,6 - 12,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

E17

E17

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 6

4. Edition
tropicalized version

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 452

Komb.-Nr. 0 402 046 195
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 5.83
company MAN
engine: D 2566 MK (F)
235 kW (1)
D 2566 MKF-Tropen
224 kW (2) MAN-Nr. 1-7980

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BUC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings (1)

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	1100	11,3-11,4
VH = max. 46				4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	= 2,0	865	12,7-12,9
										975	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	1,0 bar		LDA	1,0 bar	100	205,0-225,0
750	217,0-220,0 (214,0-223,0)		650	208,0-213,0 (205,0-216,0)		(201,0-229,0)
1100	180,0-185,0 (177,0-188,0)		LDA	0,34 bar		
			500	145,0-150,0 (142,0-153,0)		
(1)			LDA	0 bar		
			500	101,0-104,0 (98,0-107,0)		

Checking values in brackets

1.85

E18

B Governor Settings

Checking of slider PRG check (1)		Full load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1400	1145-1160 1185-1215 0 - 1,0	250	6,4	100 250 350-390	min. 7,9 6,3-6,5 = 2,0	1100 750 865 975	1,3-11,4 3,1-13,2 2,7-12,9 1,7-12,0

Torque control travel on flyweight assembly dimension a 0,7 mm

Speed regulation Δ 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(2) LDA 750 LDA 1100	1,0 bar 207,0-209,0 (203,0-213,0) 1,0 bar 171,0-177,0 (169,0-179,0)	-	LDA 650 LDA 500 LDA 500	1,0 bar 196,0-202,0 (194,0-204,0) 0,34 bar 141,0-147,0 (139,0-149,0) 0 bar 97,0-99,0 (93,0-103,0)	100	205,0-225,0 (201,0-229,0)

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure - bar	Control rod travel - diminution difference mm (1)
PES 6 P .. LS 388 + RQ .. PA 452	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

E19

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 11
2. Edition
tropicalized version

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-6

superseded 6.83

Komb.-Nr. 0 402 046 260, 0 402 046 261

company MAN

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine: D 2566 MKF
235 kW (320 PS) (1)
D 2566 MKF-Tropen
224 kW (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min.7,9	1100	11,3-11,4
VH = max. 46°				4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	=2,0	900	12,6-12,7
										1000	11,8-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
(1)						
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0	-	LDA 650	1,0 bar 208,0-213,0 (205,0-216,0)	100	205,0-225,0
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)		
			LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

1.85

E20

B Governor Settings

Checking of slider PRG check (1)		Full load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1400	1145-1160 1185-1215 0 - 1,0	250	6,4	100 250 350-390	min. 7,9 6,3-6,5 = 2,0	1100 750 865 975	11,3-11,4 13,1-13,2 12,7-12,9 11,7-12,0

Torque control travel on flyweight assembly dimension a 0,7 mm

Speed regulation AT 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40 C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	Control rod travel / cm^3/1000 strokes / mm
1	2	3	4	5	6	7
(2) LDA 750 LDA 1100	1,0 bar 207,0-209,0 (203,0-213,0) 1,0 bar 171,0-177,0 (169,0-179,0)	-	LDA 650 LDA 500 LDA 500	1,0 bar 196,0-202,0 (194,0-204,0) 0,34 bar 141,0-147,0 (139,0-149,0) 0 bar 97,0-99,0	100	205,0-225,0 (201,0-229,0)

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P...LS 388 +RQ .. PA 452	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

E21

E21

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
2. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3
Komb.-Nr. 0 401 846 499
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

superseded 84
company RVI
engine MIDS 0620 30
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	14,8-15,0	0,5(0,9)			
275	6,0-6,2	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	200	min.9,1	275	1,2-1,4
ca.65	11,6	1265-1275					275	6,0-6,2	400	2,9-3,4
	4,0	1380-1410							900	5,8-6,0
	1500	0-1,0				275-360 (3a)			1200	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 148,0-150,0 (145,0-153,0)	1265-1275*	LDA 750	0,7 bar 137,0-143,0 (134,0-146,0)	100	105,0-125,0 (101,0-129,0)	-	-
	-		LDA 500	0 bar 91;0-93,0 (88,0-96,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

E22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70	0 0,20 0,16	12,6 - 12,7 11,3 - 11,4 12,3 - 12,4 11,6 - 11,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 MB 18,3 d
5. Edition

En

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes: 84
company: Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 706

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 10 ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4-12,6	0,4 (0,8)			
300	8,5-8,7	1,4-2,2	0,4 (0,7)			
600	-	C, Sp. 4 + 5	0,6 (0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 23 (3a)	100 300	min.10,2 8,5-8,7	300 800	1,6-1,8 5,8-6,2
ca. 55	11,1 4,0 1400	1190-1200 1235-1265 0 - 1,0					430-490 = 2,0		1200 1260	8,2-8,4 10,0

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	124,0-126,0 (121,5-128,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150 600 900	12,1+0,1 12,5+0,1 12,4+0,2
			900	118,0-123,0 (115,0-126,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

E24

(1)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 SCA 11,0 r 8

1. Edition

En

PE 6 P 110 A 720 RS 3040 RQV 275-1000 PA 555-2
Komb.-Nr. 0 401 846 795

supersedes -
company: Scania
engine: DS 11 14

Testöl ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	16,8-17,0	0,6(0,8)			3,3±0,1 (3,0-3,5)
275	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 8	100 275 325-385	min. 5,9 4,4-4,6 = 2,0	275 425 520 1050	0,9-1,1 3,2-4,3 5,9-6,1 8,1
ca. 60	12,6 4,0 1350	1040-1050 1195-1225 0 - 1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 168,0-170,0 (166,0-172,0)	1040-1050*	LDA 1000 LDA 500	0,9 bar 171,5-176,5 (169,0-179,0) 0 bar 133,0-137,0 (131,0-139,0)	100 275	240,0-290,0 = 20,0-21,0 mm RW 17,0-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

F1

F1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 3040 + RQV..PA 555-2	0,90	0 0,42 0,29	13,6-13,7 12,0-12,1 13,2-13,3 12,3-12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SCA 11,0 y 1

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 20.2.1984
- Start of fuel delivery-engine: 19° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d
6. Edition
En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 3050 RQV 250-1100 PA 431/2R
Komb.-Nr. 0 401 846 714

supersedes 8.81
company: Volvo
engine TD 120 F
283 kW (385PS)

Testing with T nozzles and fuel lines 8 x 2 x 1000 according to ..W 400/305

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,5-13,6	23,9 - 24,2	0,4(0,8)			
250	3,8-3,9	2,0 - 2,5	0,3(0,7)			2,5±0,1 ** (2,2-2,9)
700	- - -	C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ]

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.12 ③a	100	min.6,5	250	0,5-1,2
							250	3,8-3,9	800	4,6-5,0
ca.48	12,5	1140-1150					500	max. 1	170	8,3
	4,0	1250-1270					280-340	= 2,0		
	1350	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a: rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤: rev/min 8	Control rod travel mm 9
LDA	1,0 bar		LDA	0 bar				
700	239,0-242,0 (236,0-245,0)	1140-1150*	700	152,0-156,0 (149,0-159,0)	100	390,0-430,0		
					250	20-25 **		
						Streuung max.3(7)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

F3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P.. RS 3050 +RQV..PA431/2R	0,14	0,80	10,5-10,6 13,1-13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 2

4. Edition

En

PE 6 P 120 A 320 RS 3050 RQV 250-1025 PA 611
Komb.-Nr. 0 401 846 751
Values only apply to test nozzle-and-holder assembly 1 688 90[illegible] 019 and fuel-injection test tubing 1 680 750 067

supersedes 84
company Volvo
engine: TD 120 FC

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC) bei RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	2,8+0,1	23,0-23,3	0,5 (0,9)			2,5 ± 0,1
250	3,6-3,8	1,8-2,3	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 8	100	min. 5,1	200	0,6-0,9
							250	3,6-3,8	475	3,9-4,5
ca. 64	11,8	1085-1095					300-360	= 2,0	670-940	6,4-6,6
	4,0	1150-1180							1025	7,5
	1300	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1085-1095*	LDA	0 bar	-	-	-	-
700	230,0-233,0		700	138,0-142,0				
	(227,0-236,0)			(135,0-145,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

F5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3050 + RQV..PA 611	1,20		12,8 - 12,9
		0	9,1 - 9,2
		0,82	12,6 - 12,7
		0,07	9,2 - 9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F6

Ed F6

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 s 1
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 720 RS 3065 RSV 350-1100 P1/481

Komb.-Nr. 0 401 876 719

superseded 6.83
company Saab-Scania
engine DN11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5+0,1	13,5 - 13,7	0,6(0,8)			2,5 ± 0,1 (2,2-2,9)
350	6,2-6,4	1,5 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x = 3,25	0,3-1,0	-	-	-	ca.20	350	5,5	-	-
(5) ca.66	1140-1150=11,5 1210-1240= 4,0 1350=0,3-1,7						350 490-550=2,0	5,9-6,1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (133,0-139,0)	1140-1150*	600	131,5-136,5 (129,0-139,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

F7

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

F7

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

F8

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 11,0 s2
2. Edition

En

PE6P 110 A 720 RS 3065
Komb.-Nr. 0 401 846 722

RQ 250/1100 PA 470 R

supersedes 6.83
company Scania
engine D 11

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5±0,1	13,5-13,7	0,6 (0,8)			2,5 ±0,1
225	5,8-6,0	0,9 - 1,3	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	11,5	1145-1160	225	5,9	100	min. 7,3	-	-
VH = max. 46°				4,0	1215-1245			225	5,8-6,0		
				1400	0 - 1,0			320-380	= 2,0		

Torque-control travel on flywheel assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	135,0-137,0 (133,0-139,0)	-	600	131,5-136,5 (129,0-139,0)	100	190,0-240,0 (186,0-244,0)
					225	9,0 - 13,0
					Streug. max. 2 (4)	

Checking values in brackets

3.85

F9

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

F10

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 K 3

1. Edition

En

PE 6 P 120A 320 RS 3118-2   RQV 250-900 PA 657-5
Komb.-Nr. 0 401 846 796
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

supersedes

company: Volvo
engine: TD 121 FC
232 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	19,7-20,0	0,5(0,9)			2,5±0,1 (2,2-2,9)
250	3,3-3,5	1,8-2,3	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	980	15,2-17,8	-	-	-	ca. 7 ③a	100 250 280-340	min. 4,8 3,3-3,5 = 2,0	200 500 660 - 850 900	0,6-0,9 4,2-4,8 6,4-6,6 7,2
ca. 62	10,4 4,0 1100	940-950 1000-1030 0 - 1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a: rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point ⑥: rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤: rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 197,0-200,0 (194,0-203,0)	940-950 *	LDA 700	0 bar 150,0-154,0 (147,0-157,0)	100 250	240,0-280,0 = 20,0-21,0 mm RW 18,0-23,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

F11

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3118-2 +RQV..PA 657-5	0,70	0 0,43 0,17	11,4-11,5 9,1-9,2 11,2-11,3 9,2-9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 12,0 f

1. Edition

En

PE 6 P 120 A 320 RS 3122 RSV 200-900 P 4/421 R
Komb.-Nr. 0 401 876 725
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-
company Volvo-Penta
engine TMD 120 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	18,3-18,7	0,5 (0,9)			2,5 ± 0,1
250	4,2-4,4	1,6-2,0	0,5 (0,8)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,7	-	-	-	ca. 22	250	3,8	-	-
	x =	4,0					250	4,2-4,4		
ca. 53 (2a)	10,7	940-950					300-360	= 2,0		
	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	183,0-187,0 (181,0-189,0)	940-950*	900	189,0-193,0 (186,0-196,0)	100	390,0-440,0 (386,0-444,0) =20,0-21,0 mm RW	250	4,3
					250	16,0-20,0 (13,0-23,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 14,6 p
3. Edition

En

PE 8 P 120 A 320 LS 3816 RSV 650-1150 PO/823

supersedes 5.84

company Daimler-Benz

engine OM 422 A
206 kW
Komb.-Nr. 0 401 87870

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1180	9,3-9,4	13,7-13,9	0,5 (0,9)			
650	3,1-3,3	1,6-2,2	0,8 (1,2)			
975	----	C, Sp. 4 u.5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-		-	1180	9,3-9,4
	x = 2,0								975	10,1-10,2
ca.46 (2a)	8,3	1210-1220							1075	9,6-9,8
	4,0	1235-1250								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1180	137,0-139,0 (134,0-142,0)	1160-1170* **	975	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

** When checking the full-load delivery, set the speed regulation at 1200 min/1. After checking set it back at 1150 min/1.

2.85

FAY

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 14,6 p 1

1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RSV 650-1150 POA 823

supersedes

company Daimler-Benz

engine OM 422 A
206 kW
Komb.-Nr. 0 401 878 70

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	9,3-9,4	13,7-13,9	0,5 (0,9)			
650	3,1-3,3	1,6-2,2	0,8 (1,2)			
975	-	C, Sp. 4 u. 5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 24	650	3,6	1130	9,3-9,4
	x =	2,25					650	3,5-3,7	1000	10,1-10,2
							655-695	= 2,0	1050	9,6-9,8
ca. 46 (2a)	8,3	1210-1220								
	4,0	1235-1250								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	137,0-139,0 (134,0-142,0)	1160-1170*	1000	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 4,0 h 1

1. Edition

En

Testöl-ISO 4113

VA 4/100 H 1200 CR 145-2

0 460 304 228

DHK: 1688 901 020/172 + 3 bar

Pre-stroke setting 0,3 mm

supersedes

company Steyr

engine WD 412-40

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	4,2-5,2	mm		
1 2 Supply pump pressure	800	4,2-4,7	kp/cm²		
1 3 Full load delivery without charge-air pressure	700	77,0-79,0	cm³/1000 strokes		
Full load delivery with charge-air pressure	-		cm³/1000 strokes		
1 4 Idle speed regulation	280	12,0-18,0	cm³/1000 strokes		
1 5 Start	100	min. 80,0	cm³/1000 strokes		
1 6 Full load speed regulation	1290	36,40-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600	800	1000
	mm	1,7-2,7 (1,5-2,9)	(4,0-5,4)	7,5-8,5 (7,3-8,7)
2 2 Supply pump	rev/min	200	800	1200
	kp/cm²	1,2-1,7 (1,0-1,9)	(4,0-4,9)	5,5-6,1 (5,3-6,3)
Overflow delivery	rev/min	500	1200	
	cm³/10 s	55-97 (40-112)	55-97 (40-112)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380	max. 2,0		
		1330	min. 2,0		
		1290		(35,0-45,0)	
		1180	74,5-76,5	(73,5-77,5)	
		700		(76,0-80,0)	
		500	76,5-79,5	(75,5-80,5)	
	Stop	1200	0		
Idle stop	Full	280		(11,0-19,0)	
		350	min. 2,0		
		410	max. 2,0		
	Start	100	min. 80,0		

3.85

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4 ° β = 40 ± 8 ° γ = 30 - 8 ° δ = 60 + 8 °	Pump Dimension IV Dimension V = 24,65 mm

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PER 5,8 c 4

3. Edition En

Testoil-ISO 4113

VE 6/12 F 1300 L 21-2

0 460 426 013

DHK: 1 688 901 020

Overflow temperature 45° C

supersedes 12.82
company: Perkins
engine: T 6.354.4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,45 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	2,5-2,9	mm	0,65	
1.2 Supply-pump pressure	600	3,8-4,4	bar (kgf/cm²)	0,65	
1.3 Full-load delivery with charge-air pressure	1000	92,5-93,5	cm³/1000 strokes	0,65	max. 3,5
Full-load delivery without charge-air pressure	500	68,5-72,5	cm³/1000 strokes	0	
1.4 Idle regulation	270	8,0-12,0	cm³/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	1480	42,0-50,0	cm³/1000 strokes	0,65	
1.6 Start	100	min. 78	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	600	800
	mm	0,7-1,5 (0,4-1,8)	(2,0-3,4)	3,8-4,6 (3,5-4,9)
2.2 Supply pump	n = rev/min	400	1300	
	bar (kgf/cm²)	3,0-3,6	6,0-6,6	
Overflow delivery	n = rev/min	500	1300	
	cm³/10 s	55-138 (40-153)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1550	max. 9,0		0,65
	1480		(41,0-51,0)	0,65
	1300	85,5-88,5	(84,0-90,0)	0,65
	1000		(90,0-96,0)	0,65
	1000	78,5-82,5	(77,5-83,5)	0
	700 *	84,5-88,5	(82,8-90,2)	0,32
	500		(66,8-74,2)	0
switch-off	1300	0		
Idle stop	330-420	0		
	270		(5,0-15,0)	
End stop	150	min. 78		
	230	max. 75		

2.4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,4
MS	0,9-1,1
SVS	max. 6,0
A X K	20,2-22,2
B X L	12,5-15,8

Observations

* Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

⑥ **46**

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3bl

2. Edition

En

Testöl-ISO 4113

VE 6/10 F 2400 L 32

0 460 406 003

Overflow temperature 45° C

supersedes: VW
company:
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications checking values in brackets ( )

2.1 Timing device	n = rev/min	1000 / 1500	2400
	mm	0,8-1,6(0,5-1,9)(2,8-3,2)	5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min	600	2400
	bar (kgf/cm²)	2,8-3,4	7,7-8,3
Overflow delivery	n = rev/min	500	2400
	cm³/10 s	55-110(40-125)	55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2700	(5,0-13,0)	
	2600	15,0-22,0 (14,5-22,5)	
	2400	22,0-24,0 (20,8-25,2)	
	1500	(26,8-31,2)	
	750	26,0-29,0 (24,5-30,5)	
switch-off elektr.	400	0	
Idle stop	400	3,0-9,0	
	350	(8,0-16,0)	
End stop	400	min.20,0	
	500	max.25,0	

2.4 Solenoid: max. cut-in voltage xxx min. 10,0 V; test voltage xxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max.3,0
XK	18,5-20,5
XL	9,2-12,9

Observations

F19

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3 b
4. Edition

En

Test-ISO 4113

VE 6/10 F 2400 L 32-1 (P)
0 460 406 009; 010 Overflow temperature 45° C

superseded 10.82
company: VW
engine: 087/10 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6(0,5-1,9)	(2,3-3,7)	5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2700	(5,0-13,0)	
	2600	15,0-22,0 (14,5-22,5)	
	2400	22,0-24,0 (20,8-25,2)	
	1500	(26,8-31,2)	
	750	26,0-29,0 (24,5-30,5)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	400	3,0-9,0	
	350	(8,0-16,0)	
End stop	400	min. 20	
	500	max. 25	

2.4 Solenoid — max. cut-in voltage xxxx min. 10,0 V
test voltage xxxxxxxxx rated voltage 12 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
A	
XK	18,5-20,5
B XL	9.2-12,9

Observations

Stop check (lever) at n = 2400 min/1

F20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k

2. Edition

En

VE 6/10 F 2400 L 32-2 Overflow temperature 45° C

0 460 406 037

supersedes 3.84
company: VWW
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	–		cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0		
	2700		(5,0-13,0)	
	2400	22,0-24,0	(20,7-25,3)	
	1500		(26,7-31,3)	
	750	26,0-29,0	(24,5-30,5)	
switch-off	70-400	0		
Idle stop	375		(4,0-12,0)	
	600	max. 4,0		
End stop	400	min. 20,0		
	500	max. 25,0		

2.4 Solenoid	max. cut-in voltage	xxx min. 10 V
	test voltage	xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 k 2

2. Edition

En

Tesi-ISO 4113

VE 6/10 F 2400 L 32-3 Overflow temperature 45° C supersedes 3.84

0 460 406 038 company: VW

engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	–		cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	600		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0		
	2700		(5,0-13,0)	
	2400	22,0-24,0	(20,7-25,3)	
	1500		(26,7-31,5)	
	750	26,0-29,0	(24,5-30,5)	
switch-off elektr.	70-400	0		
mech.	2400	0		
Idle stop	600	max. 4,0		
	375		(4,0-12,0)	
	400	min. 20,0		
End stop	500	max. 25,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V

test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

F22

Test Specifications Distributor-type Fuel-injection Pumps

Tesci-ISO 4113

VE 4/9 F 2250 R 41

0 460 494 027

Overflow temperature 45° C

superseded 10.84

company: Renault

engine: 852

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,4-4,8	mm		
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	39,5-40,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	400	7,0-11,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	17,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 52,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1400	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000
	mm	2,6-3,4 (2,3-3,7)	(3,9-5,3)	6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min	1000		2000
	bar (kgf/cm²)	3,9-4,5		6,5-7,1
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 2,0		
	2400		(16,0-24,0)	
	2200	32,8-34,8	(31,5-36,1)	
	2100	33,8-35,8	(32,5-37,1)	
	1400		(37,7-42,3)	
	1000	36,8-39,8	(35,3-41,3)	
switch-off	2500	0		
Idle stop	650	max. 5,0		
	400		(5,0-13,0)	
End stop	320	min. 45,0		
	430	max. 45,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V

test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 3,5
A XK	20,1-22,1
B XL	9,5-13,3

Observations

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b 3

2. Edition

En

Testoil-ISO 4113

VE 4/10 F 2075 R 62 0 460 404 011

DHK: 1 688 901 022/130 bar

Test pressure line 6x2x450/1 680 750 073

Overflow temperature 45° C

supersedes 3.84
company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,2-5,6	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	46,5-47,5	cm³/1000 strokes	0,67	2,0 (3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	375	12,0-16,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2400	12,0-18,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,7-2,5(1,4-2,8)	(4,7-6,1)	7,9-8,7(7,6-9,0)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2000
	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500 (0 bar)		2075 (0,67 bar)
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	5,0-11,0	(4,0-12,0)	0,67
	2400		(11,0-19,0)	0,67
	2000	44,0-47,0	(43,2-47,8)	0,67
	1250		(44,7-49,3)	0,67
	750 *	42,5-43,5	(40,7-45,3)	0,25
	500		(34,2-38,8)	0
switch-off	2075	0		
Idle stop	375		(10,0-18,0)	
	480	max. 1,0		
	1250	max. 2,0		
End stop	320	min. 52		
	420	max. 52		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
xxxxxxxxxxxx rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 4,6
A XK	20,2-22,2
B XL	9,5-12,8

Observations

* Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

F24

⑥ Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 b 2

2. Edition

En

Tesi:ISO 4113

VE 4/10 F 2125 R 62-2 Overflow temperature 45° C
DHK: 1 688 901 022/130 bar
Test pressure line
6x2x450/1 680 750 073

supersedes 3.84
company: Peugeot
engine: XD 2 S 81 A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,2-5,6	mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	46,5-47,5	cm³/1000 strokes	0,67	2,0 (3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	425	12,0-16,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2450	12,0-18,0	cm³/1000 strokes	0,67	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1400	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,7-2,5 (1,4-2,8)	(4,7-6,1)	7,9-8,7(7,6-9,0)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2000
	bar (kgf/cm²)	2,1-2,7		7,1-7,7
Overflow delivery	n = rev/min	500 (0 bar)		2125 (0,67 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	5,0-11,0	(4,0-12,0)	0,67
	1450		(11,0-19,0)	0,67
	2000	44,0-47,0	(43,2-47,8)	0,67
	1250		(44,7-49,3)	0,67
	750 *	42,5-43,5	(40,7-45,3)	0,25
	500		(34,2-38,8)	0
switch-off	2125	0		
Idle stop	425		(10,0-18,0)	
	590	max. 1,0		
	1250	max. 2,0		
End stop	320	min. 52		
	420	max. 52		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max.4,5
A XK	20,2-22,2
B XL	9,5-12,8

Observations
* Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

G1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,5 a

3. Edition

En

VE 4/9 F 2250 R 84
0 460 494 079

Overflow temperature 45° C

supersedes: 1.85
company: Peugeot
engine: XD 3

Test pressure line
DHK: 1 688 901 022/130 bar 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,4-5,8	mm		
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	37,9-38,9	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	400	6,0-10,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2325	25,5-31,5	cm³/1000 strokes		
1.6 Start	100	min. 45	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1500	2000
	mm	0,6-1,4(0,3-1,7)	2,5-3,1(2,1-3,5)	(4,9-6,3)	8,1-8,9(7,8-9,2)
2.2 Supply pump	n = rev/min	400		2200	
	bar (kgf/cm²)	2,1-2,7		7,5-8,1	
Overflow delivery	n = rev/min	400		2250	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 2,0		
	2450	4,5-12,5	(4,5-12,5)	
	2325		(24,5-32,5)	
	2200	39,9-41,9	(38,7-43,1)	
	2000	39,2-41,2	(38,0-42,4)	
	1500		(36,2-40,6)	
	1000	37,2-39,8	(36,3-40,7)	
	600	35,8-38,8	(34,3-40,3)	
switch-off				
Idle stop	400		(4,0-12,0)	
	440	max. 2,0		
Endanschlag	350	min. 45		
	450	max. 45		

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx Nennspannung 12 V

3. Dimensions

Designation	for assembly and adjustment mm
K	K 1
KF	5,2-5,4
MS	0,9-1,2
SVS	3,3
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IBE 4,0 a 1

1. Edition

En

Testoil ISO 4113

VE 4/12 F 1350 R 103-1 **Overflow temperature 45° C**

0 460 424 017

DHK: 1 688 901 020/172 + 3 bar

supersedes –
company: Iberica
engine: T 4.236

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	4,2-4,6	mm	0,8	
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1000	90,5-91,5	cm³/1000 strokes	0,8	3,5 (4,5)
Full-load delivery without charge-air pressure	500	63,5-64,5	cm³/1000 strokes	0	
1.4 Idle regulation	300	7,0-11,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1450	52,0-58,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 70	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	500	1000	1300
	mm	0,7-1,5 (0,4-1,8)	(3,7-5,1)	5,8-6,6 (5,7-6,9)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	500		1300
	bar (kgf/cm²)	3,3-3,9		6,7-7,3
Overflow delivery LDA = 0,8 bar	n = rev/min	500		1300
	cm³/10 s	41-83 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1650	max. 2,0		0,8
	1600	min. 3,0		0,8
	1550	16,5-23,5	(15,0-25,0)	0,8
	1450		(50,0-60,0)	0,8
	1300	83,5-86,5	(80,0-90,0)	0,8
	1000		(88,0-94,0)	0,8
	700 *	86,0-87,0	(82,8-90,2)	0,4
	500	85,0-88,0	(82,8-90,2)	0,8
	500		(60,3-67,7)	0
switch-off				
Idle stop	300		(4,0-14,0)	
	350	min. 1,5		
	430	max. 1,5		
End stop	110	min. 70		
	210	max. 60		
2.4 Solenoid	max. cut-in voltage			
	test voltage			

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	5,2-5,4
MS	1,1-1,3
SVS	5,0
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,2 mm

G3

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 3,6 e
2. Edition
En

Testoil-ISO 4113

VE6/11/F1900L113 — Overflow temperature 45° C

0 460 416 022

supersedes: 8.84
company: Motori VM
engine: HR 692 HT/9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,7-5,3	mm	0,65	
1.2 Supply-pump pressure	1800	6,6-7,2	bar (kgf/cm²)	0,65	
1.3 Full-load delivery with charge-air pressure	1500	47,5-48,5	cm³/1000 strokes	0,65	3,5 (4,0)
Full-load delivery without charge-air pressure	600	36,0-40,0	cm³/1000 strokes	0	
1.4 Idle regulation	450	10,0-14,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2000	40,5-47,5	cm³/1000 strokes	0,65	3,0 (4,0)
1.6 Start	100	min. 40,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,65 bar	n = rev/min	1000	1500 1800
	mm	2,1-2,9(1,8-3,2)	(4,3-5,7) 6,5-6,9 (6,0-7,4)
2.2 Supply pump LDA=0,65 bar	n = rev/min	400	
	bar (kgf/cm²)	1,7-2,3	
Overflow delivery	n = rev/min	400	1900
	cm³/10 s	41-83(26-98)	55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2200	max 1,5	0,65
	2100	15,0-21,0(13,5-22,5)	0,65
	2000	(39,5-48,5)	0,65
	1900	45,2-47,8(43,9-49,1)	0,65
		(45,4-50,6)	0,65
	* 600	39,0-42,0(37,1-43,9)	0,26
	600	(34,6-41,4)	0
switch-off			
Idle stop	700	max 1,5	
	550	2,0-8,0(0,5-9,5)	
	450	(7,5-16,5)	
End stop	350	min 40	
	450	max 45	

2.4 Solenoid		
	max. cut-in voltage	
	test voltage	min. 10 Volt rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	6,4-6,6
MS	0,9-1,1
SVS	2,4
XK	20,2-22,2
XL	11,9-15,2
A	
B	

Observations

Manifold-pressure compensator stroke = 4,0 mm

G4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6 h 2
1. Edition
En

Testoil-ISO 4113

VE 6/12 F 1400 R 120-4
0 460 426 031

Overflow temperature 45° C

supersedes –
company: MAN
engine: D0226 MC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,5-3,9	mm	0,8	
1.2 Supply-pump pressure	800	5,1-5,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	630	85,5-86,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1000	112,0-113,0	cm³/1000 strokes	0,8	4,0
1.4 Idle regulation	300	10,0-16,0	cm³/1000 strokes	0	3,5
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes	0	
1.6 Start	1440	92,0-100,0	cm³/1000 strokes	0,8	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100
LDA=0,8bar	mm	1,2-2,0 (0,9-2,3)	(3,0-4,4)	4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min	500		1100
LDA=0,8bar	bar (kgf/cm²)	3,8-4,4		6,1-6,7
Overflow delivery	n = rev/min	500		1400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1650	max. 1,0	0,8
	1550	26,0-34,0 (25,0-35,0)	0,8
	1440	(91,0-101,0)	0,8
	1400	108,0-112,0 (107,0-113,0)	0,8
	1000	(109,5-115,5)	0,8
	800	110,0-114,0 (109,0-115,0)	0,8
	630	112,0-116,0 (110,3-117,7)	0,8
	* 630	106,5-107,5 (103,3-110,7)	0,4
	630	(82,3-89,7)	0
switch-off			
Idle stop	300	(8,0-18,0)	
	350	max. 5,0	
	400	max. 1,0	
End stop	230	min. 100	
	400	max. 100	

2.4 Solenoid — max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	–
KF	5,7 - 6,0
MS	1,0 - 1,2
SVS	
A	25,0 - 27,0
B	13,5 - 16,8

Observations

Manifold-pressure compensator stroke = 4,5 mm

G5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,5 d

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2125 R 126-3

0 460 494 178

DHK: 1 688 901 022 / Test pressure line 6x2x450/1 680 750 073

Overflow temperature 45° C

supersedes

company:

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting — mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,8-6,2	mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7	cm³/1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	500	41,3-42,3	cm³/1000 strokes	0	
1.4 Idle regulation	400	17,0-21,0	cm³/1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2350	26,5-32,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 67	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	750	1000	1500	2000
	mm	0,8-1,6 (0,5-1,9)	2,5-3,3 (2,2-3,6)	(5,3-6,7)	7,8-8,6 (7,5-8,9)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	200	750	2000	
	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500 (0 bar)	2125		
	cm³/10 s	41-83 (26-98)	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 1,0		0,8
	2350		(25,5-33,5)	0,8
	2250	38,5-44,5	(37,5-45,5)	0,8
	2000	52,2-54,2	(51,0-55,4)	0,8
	1500		(52,0-56,4)	0,8
	1000	51,8-54,8	(51,1-55,5)	0,8
	750 *	46,8-47,8	(44,3-50,3)	0,25
	500		(38,8-44,8)	0
switch-off				
Idle stop	400		(15,0-23,0)	
	450	5,0-9,0	(3,0-11,0)	
	550	max. 3,5		
End stop	230	min. 60		
	330	max. 60		

2.4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	K1
KF	5,2-5,4
MS	1,2-1,4
SVS	5,5
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,5 mm

24 V pushing electromagnet

G6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 i 3
3. Edition
En

Testoil-ISO 4113

VE 5/10 F 2400 L 137
0 460 405 030

Overflow temperature 45° C

supersedes 7.84
company: VWW
engine: 153

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,4-2,8	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	35,0-36,0	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	6,0-12,0	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1(1,0-2,4)	(1,9-3,3)	5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,3-7,9
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2650	(5,0-13,0)	
	2400	28,0-30,0(26,8-31,2)	
	1400	(31,8-36,2)	
	750	24,5-27,5(23,0-29,0)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min.15,5	
	500	max.23,5	

2.4 Solenoid	max. cut-in voltage	xxx min. 10,0 V
	test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-6,0
	1,7-1,9
MS	2,8
SVS	
A	
B	

Observations

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 i 2

3. Edition

En

Testöl-ISO 4113

VE 5/10 F 2400 L 137-1 Overflow temperature 45° C

supersedes 7.84
company: VWW
engine: 153

0 460 405 032

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,4-2,8	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400		cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	6,0-12,0	cm³/1000 strokes		
1.6 Start	100	min. 50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1 (1,0-2,4)	(1,9-3,3)	5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,3-7,9
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2650	(5,0-13,0)	
	2400	28,0-30,0 (26,8-31,2)	
	1400	(31,8-36,2)	
	750	24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
mech.			
elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
	400	min. 15,5	
End stop	500	max. 23,5	

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-6,0
	1,7-1,9
MS	2,8
SVS	
A	
B	

Observations

G8

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 13

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2400 R 138-4

0 460 494 183

Overflow temperature 45° C

supersedes
company: VW
engine: 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,1-2,5	mm		
1.2 Supply-pump pressure	1500	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	32,7-33,7	cm³/1000 strokes		max. 2,5
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1100	1500	2400
	mm	0,4-1,2 (0,1-1,5)	(1,6-3,0)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600	2400	
	bar (kgf/cm²)	2,2-2,8	6,6-7,2	
Overflow delivery	n = rev/min	600	2400	
	cm³/10 s	41-83 (26-98)	55-138 (40-153	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,5-29,5	(26,3-30,7)	
	1500		(31,0-35,4)	
	600	21,7-24,7	(20,2-26,2)	
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	650	max. 7,5		
	1200	max. 5,0		
End stop	400	min. 18,0		
	500	max. 23,5		

2.4 Solenoid	max. cut-in voltage	xxx min. 10 Volt
	test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	4,8
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

Test-ISO 4113

VE 4/9 F 2250 R 149-3 Overflow temperature 45° C

0 460 494 184

supersedes -
company: VW
engine: 085 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,3-3,7	mm	0,75	
1.2 Supply-pump pressure	1500	4,6-5,2	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	2250
	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,1-6,9 (5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		2250
	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)
	cm³/10 s	41-83 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,0-40,0	(36,8-41,2)	0,75
	1500		(41,8-46,2)	0,75
	1000*	33,5-34,5	(31,8-36,2)	0,30
	600	31,5-34,5	(30,0-36,0)	0,75
	600		(21,0-27,0)	0
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0	
	1200	max. 4,0		
End stop	400	min. 22		
	500	max. 30		

2.4 Solenoid — max. cut-in voltage xxx 10 V; test voltage xxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,1
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,5 mm

G10

Test Specification

VE 4/9 F 2250 R 158

0 460 494 145

Overflow temperature 45° C

supersedes 10.84
company: Renault
engine: J85-706

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/. .

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,4-4,8	mm		
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	39,5-40,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	400	7,0-11,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	17,0-23,0	cm³/1000 strokes		
1.6 Start	100	min. 52,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1400				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000
	mm	2,6-3,4 (2,3-3,7)	(3,9-5,3)	6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min	1000		2000
	bar (kgf/cm²)	3,8-4,5		6,5-7,1
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 2,0		
	2400		(16,0-24,0)	
	2200	32,8-34,8	(31,5-36,1)	
	2100	33,8-35,8	(32,5-37,1)	
	1400		(37,7-42,3)	
	1000	36,8-39,8	(35,3-41,3)	
switch-off	2500	0		
Idle stop	650	max. 5,0		
	400		(5,0-13,0)	
End stop	320	min. 45,0		
	430	max. 45,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V

test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 3,6
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 f
2. Edition
En

Testbench ETS

VE 6/12 F 1100 R 159-8 Overflow temperature 45° C
0 460 426 050
DHK: 1 688 901 016/207+3 bar

superseded 8.84
company Cummins
engine: 6 BT - 590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	3,1-3,5	mm		
1.2 Supply-pump pressure	750	3,7-4,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	73,0-74,0	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	18,5-24,5	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1175	28,0-34,0	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	750	1100
	mm	0,3-1,1 (0-1,4)	(2,6-4,0)	5,4-6,2 (5,1-6,5)
2.2 Supply pump	n = rev/min	400		1100
	bar (kgf/cm²)	2,2-2,8		5,2-5,8
Overflow delivery	n = rev/min	400		1100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1250	max. 1,5		
	1175		(26,0-36,0)	
	1100	66,0-69,0	(64,5-70,5)	
	900		(70,5-76,5)	
	750	74,5-78,5	(72,8-80,2)	
	400	89,0-93,0	(87,3-94,7)	
switch-off				
ELAB	375	0		
Idle stop	300	47,0-55,0	(46,0-56,0)	
	375		(16,5-26,5)	
	450	max. 1,5		
End stop	130	min. 97		
	200	max. 90		

2.4 Solenoid

max. cut-off voltage xxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 b
5. Edition
En

VE 4/9 F 2300 R 162
0 460 494 153 Overflow temperature 45° C
DHK: 1 688 901 022/130 bar Test pressure line 6x2x450/1 680 750 073

supersedes: 1.85
company: Peugeot
engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	3,2-3,6	mm		
1.2 Supply-pump pressure	1250	3,9-4,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	A 550	2,5-3,5	cm³/1000 strokes		B 2,0 (3,0)
1.5 Full-speed regulation	2400	20,0-26,0	cm³/1000 strokes		
1.6 Start	100	min. 44,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1250	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1250	2000
	mm	0,2-1,0 (0-1,3)	(2,7-4,1)	7,5-8,3 (7,2-8,6)
2.2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	41-83 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0		
	2500	11,5-17,5	(10,5-18,5)	
	2400		(19,0-27,0)	
	2250	30,0-32,0	(28,8-33,2)	
	2000	30,5-32,5	(29,3-33,7)	
	1250		(27,8-32,2)	
	700	29,5-32,5	(28,0-34,0)	
switch-off	2300	0		
Idle stop A	550	2,5-3,5		
B	375	8,5-10,5	(5,5-13,5)	
C	470	8,0-10,5	(5,5-13,0)	
End stop	200	min. 40,0		
	300	max. 35,0		

2.4 Solenoid
max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm Δ
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations
* Residual delivery setting Idle setting (LFG) as per VDT-I-460/135

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 3,6 e 1

1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1900 L 178 **Overflow temperature 45° C**

0 460 416 035

supersedes –

company: Motori-VM

engine: HR 692 HTJ/9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,8-4,2	mm	0,75	
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	59,0-60,0	cm³/1000 strokes	0,75	3,5(4,0)
Full-load delivery without charge-air pressure	600	42,0-43,0	cm³/1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0	cm³/1000 strokes	0	3,5(4,0)
1.5 Full-speed regulation	2000	44,0-50,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 40,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	1850
	mm	0,9-1,7 (0,6-2,0)	(3,3-4,7)	5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		1850
	bar (kgf/cm²)	2,0-2,6		6,0-6,6
Overflow delivery LDA=0,75 bar	n = rev/min	600		1900
	cm³/10 s	41-83 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	1,0-9,0	(0,5-9,5)	0,75
	2000		(42,5-51,5)	0,75
	1850	55,0-57,6	(53,6-60,0)	0,75
	1500		(56,8-62,2)	0,75
	600*	46,0-47,0	(43,1-49,9)	0,30
	600		(39,1-45,9)	0
switch-off				
Idle stop	350		(17,5-26,5)	
	400	7,5-12,5	(5,5-14,5)	
	450	max. 4,0		
End stop	390	min. 49		
	500	max. 44		

2.4 Solenoid — max. cut-in voltage xxx min. 10 Volt; test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	6,4-6,6
MS	0,9-1,1
SVS	4,3
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,0 mm

G14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,5 c 1

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2075 R 180
0 460 494 158

Overflow temperature 45° C

supersedes –
company: PSA-Peugeot
engine: XD 3 T

DHX: 1688 901 022 / Test pressure line 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,3-5,7	mm	0,8	
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	42,0-43,0	cm³/1000 strokes	0	
1.4 Idle regulation	400	7,0-11,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	31,0-37,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 65	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	750	1500	2000
	mm	0,9-1,7 (0,6-2,0)	(4,8-6,2)	7,9-8,7 (7,6-9,0)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	200	750	2000
	bar (kgf/cm²)	1,1-1,7	3,1-3,7	6,6-7,2
Overflow delivery	n = rev/min	500		2075
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0		0,8
	2300		(30,0-38,0)	0,8
	2200	42,0-50,0	(42,0-50,0)	0,8
	2000	53,5-56,5	(52,8-57,2)	0,8
	1500		(55,3-59,7)	0,8
	1000	54,0-57,0	(53,3-57,7)	0,8
	750*	49,0-50,0	(46,5-52,5)	0,3
	500		(39,5-45,5)	0
switch-off				
Idle stop	400		(5,0-13,0)	
	500	max. 3,0		
End stop	260	min. 60		
	360	max. 60		

2.4 Solenoid
max. cut-in voltage
test voltage

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A	
B	

Observations

Manifold-pressure compensator stroke = 7,5 mm

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,9g
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2100 L 184
0 460 494 163
DHK: 1 688 901 022/130 bar:

Overflow temperature 45° C

Test pressure line 6x2x450/1 680 750 073

supersedes: -
company: Fiat
engine: X 8/49

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,4- 5,8	mm	0,8	
1.2 Supply-pump pressure	1500	6,1- 6,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,3-46,3	cm³/1000 strokes	0,8	2,5
Full-load delivery without charge-air pressure	800	37,8-38,8	cm³/1000 strokes	0	
1.4 Idle regulation	350	8,0-12,0	cm³/1000 strokes	0	2,5
1.5 Full-speed regulation	2400	15,0-21,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 57,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1500	-		0,8	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	800	1500	2000
	mm	1,7-2,5(1,4-2,8)	(4,9-6,3)	7,6-8,4(7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	400	800	2000
	bar (kgf/cm²)	2,8-3,4	4,1-4,7	7,5-8,1
Overflow delivery	n = rev/min	600		2100 (0,8 bar)
	cm³/10 s	41-83(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 5,0		0,8
	2400		(14,0-22,0)	0,8
	2300	29,0-36,0	(28,5-36,5)	0,8
	2100	45,5-48,5	(44,8-49,2)	0,8
	1500		(43,6-48,0)	0,8
	800 *	43,5-44,5	(41,0-47,0)	0,45
	800	37,8-38,5	(35,3-41,3)	0
	600	39,5-41,5	(37,5-43,5)	0
switch-off				
Idle stop	350		(6,0-14,0)	
	400	2,0-8,0	(1,0- 9,0)	
	500	max. 1,5		
End stop	300	min. 55		
	500	max. 45		

2.4 Solenoid — max. cut-in voltage
— test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	5,4
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,5 mm

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 11
1. Edition
En

Testoil-ISO 4113

VE 4/9 F 2250 R 186
0 460 494 162

Overflow temperature 45° C

supersedes
company: VW
engine: 086T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,9 - 3,3	mm	0,75	
1.2 Supply-pump pressure	1250	4,0 - 4,6	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	43,5 - 44,5	cm³/1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	23,0 - 24,0	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2525	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1250	-		0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1250	2250
LDA=0,75 bar	mm	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600	2250
LDA=0,75 bar	bar (kgf/cm²)	2,5-3,1	6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)	2250 (0,75 bar)
	cm³/10 s	55-138(40-153)	55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,0-40,0	(36,8-41,2)	0,75
	1500		(41,8-46,2)	0,75
	1000*	33,0-34,0	(31,3-35,7)	0,30
	600	31,5-34,5	(30,0-36,0)	0,75
	600		(20,5-26,5)	0
switch-off				
elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1250	max. 4,0		
End stop	400	min. 21		
	500	max. 29		
2.4 Solenoid	max. cut-in voltage	xxx min. 10 Volt		
	test voltage	rated voltage 12V.		

xxxxxxxxxx

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	3,7
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,5 mm

G17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,0 r
1. Edition
En

Testöl-ISO 4113

VE 4//11 F 1300 L 191
0 460 414 017

Overflow temperature 45° C

supersedes: -
company: Volvo-Penta
engine: TD 30 WK

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	1,2-1,6	mm	0,8	
1.2 Supply-pump pressure	1100	5,1-5,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1100	62,0-63,0	cm³/1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	600	41,5-42,5	cm³/1000 strokes	0	
1.4 Idle regulation	350	13,0-17,0	cm³/1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1350	34,5-40,5	cm³/1000 strokes	0,8	
1.6 Start	100	min. 65	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA= 0,8 bar	n = rev/min	900	1100	1300
	mm	0,2-0,8 (0-1,2)	(0,7-2,1)	2,0-2,6 (1,6-3,0)
2.2 Supply pump LDA= 0,8 bar	n = rev/min	500		1300
	bar (kgf/cm²)	2,8-3,4		5,8-6,4
Overflow delivery LDA = 0,8 bar	n = rev/min	500		1300
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1460	max. 2,0		0,8
	1350		(33,0-42,0)	0,8
	1250	60,5-63,5	(59,3-64,7)	0,8
	1100		(59,8-65,2)	0,8
	1100	50,5-53,5	(49,3-54,7)	0
	600*	45,5-46,5	(42,6-49,4	0,3
	600		(38,6-45,4)	0
switch-off				
Idle stop	350		(10,5-19,5)	
	380	5,5-11,5	(4,0-13,0)	
	420	max. 2,5		
End stop	350	min. 53		
	450	max. 48		
2.4 Solenoid	max. cut-in voltage			
	test voltage			

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	4,0
A	
B	

Observations

* Manifold-pressure compensator stroke = 6,2 mm

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h 1
1. Edition
En

VE 4/10 F 2050 R 192
0 460 404 040

supersedes
company Fiat
engine 8144.91.200

Overflow temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	5,3-5,7	mm	0,8	
1 2 Supply pump pressure	1500	6,1-6,7	bar (kgf/cm²)	0,8	
1 3 Full-load delivery without charge-air pressure	1500	57,5-58,5	cm³/1000 strokes	0,8	3,0
Full-load delivery with charge-air pressure	600	42,5-43,5	cm³/1000 strokes	0	
1 4 Idle speed regulation	400	16,0-20,0	cm³/1000 strokes	0	3,0
1 5 Start	2250	34,5-40,5	cm³/1000 strokes	0,8	
1 6 Full-load speed regulation	100	44,0-64,0	cm³/1000 strokes	0	
1 7 Load-dependent start of delivery	1500	-		0,8	

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,8 bar	n = rev/min	600	1500	2050
	mm	1,1-1,9 (0,8-2,2)	(4,8-6,2)	7,6-8,4 (7,3-8,7)
2 2 Supply pump LDA=0,8 bar	n = rev/min	400	600	2050
	bar (kgf/cm²)	3,4-4,0	4,0-4,6	7,4-8,0
Overflow delivery LDA=0,8 bar	n = rev/min	600		2050
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2400	max. 3,0		0,8
	2350	1,5.8,5	(1,0-9,0)	0,8
	2250		(33,5-41,5)	0,8
	2050	48,5-51,5	(47,8-52,2)	0,8
	1500		(55,8-60,2)	0,8
	800*	52,5-53,5	(50,0-56,0)	0,3
	600	58,0-61,0	(56,5-62,2)	0,8
	600		(40,8-45,2)	0
switch-off				
Idle stop	400		(14,0-22,0)	
	500	1,0-7,0	(0-8,0)	
	600	max. 4,0		
End stop	450	max. 47,0		

2.4 Solenoid — cut-in voltage xxx min 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	
KF	5,8
MS	1,3
SVS	2,2
A	
B	

Observations

*LDA-stroke 4,5 mm

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h2
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1500 R 196
0 460 416 042
DHK: 1 688 901 020/172 + 3 bar

Overflow temperature 45° C

supersedes -
company: Fiat-Iveco
engine: 8060.05.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,8- 4,2	mm		
1.2 Supply-pump pressure	1000	5,4- 6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	68,7-69,7	cm³/1000 strokes		3,5
1.4 Idle regulation	425	8,0-12,0	cm³/1000 strokes		4,0
1.5 Full-speed regulation	1600	45,0-51,0	cm³/1000 strokes		
1.6 Start	100	min. 76,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1300	1500
	mm	1,1-1,9(0,8-2,2)	(3,3-4,7)	6,3-6,9(5,9-7,3)	7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min	200	700		1500
	bar (kgf/cm²)	1,5-2,1	4,2-4,8		7,2-7,8
Overflow delivery	n = rev/min	600			1500
	cm³/10 s	41-83(26-98)			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1730	max. 2,0		
	1650	34,5-41,5	(33,5-42,5)	
	1600		(43,5-52,5)	
	1500	64,5-67,5	(63,3-68,7)	
	1000		(66,5-71,9)	
	600	57,0-60,0	(55,1-61,9)	
switch-off				
Idle stop	425		(5,5-14,5)	
	500	max. 2,0		
End stop	200	min. 80		
	300	max. 32		

2.4 Solenoid — max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,9-2,1
SVS	
A	
B	

Observations

Pulling electro-magnet 24 V

G20

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,0 f

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2150 L 202

0 460 494 167

Overflow temperature 45° C

superseded company: Motori VM

engine: HR 488 HJ

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	4,7-5,1	mm	0,8	
1.2 Supply-pump pressure	1600	4,9-5,5	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	48,5-49,5	cm³/1000 strokes	0,8	2,5
Full-load delivery without charge-air pressure	750	36,0-37,0	cm³/1000 strokes	0	
1.4 Idle regulation	400	11,0-15,0	cm³/1000 strokes	0	2,5
1.5 Full-speed regulation	2420	12,0-18,0	cm³/1000 strokes	0,8	
1.6 Start	100	34,0-50,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	1600	-		0,8	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min	1000	1600	2150
	mm	1,3-2,1 (1,0-2,4)	(4,2-5,6)	7,6-8,4 (7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	600	1000	2150
	bar (kgf/cm²)	1,5-2,1	2,8-3,4	6,7-7,3
Overflow delivery LDA= 0,8 bar	n = rev/min	600	2150	
	cm³/10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max. 2,0		0,8
	2420		(11,0-19,0)	0,8
	2270	30,5-37,5	(30,0-38,0)	0,8
	2150	39,0-42,0	(36,5-44,5)	0,8
	1500		(46,8-51,2)	0,8
	750	49,0-52,0	(47,5-53,5	0,8
	750*	45,5-46,5	(43,0-49,0)	0,4
	750		(33,5-39,5)	0
switch-off				
Idle stop	400		(9,0-17,0)	
	500	2,0-8,0	(1,0-9,0)	
	700	max. 4,0		
End stop	400	min. 36		
	500	max. 37		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V; test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,4
MS	0,7-0,9
SVS	3,2
A	
B	

Observations

* Manifold-pressure compensator stroke = 6,4 mm

G21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

3.85

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 h3

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2300 R 207
0 460 494 170
UHK: 1 688 901 022/130 bar

Overflow temperature 45° C

Test pressure line
6x2x450/1 680 750 073

supersedes -
company: Fiat
engine: X 8/34

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,1- 4,5	mm		
1.2 Supply-pump pressure	1500	5,3- 5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5	cm³/1000 strokes		2,5
1.4 Idle regulation	380	10,0-14,0	cm³/1000 strokes		2,5
1.5 Full-speed regulation	2450	19,0-25,0	cm³/1000 strokes		
1.6 Start	100	min. 55	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,6-2,4 (1,3-2,7)	(3,6-5,0)	7,0-7,8 (6,7-8,1)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	3,1-3,7		7,2-7,8
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	41-86 (26-98)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2900	max. 1,5		
	2650	2,0-9,0	(1,5-9,5)	
	2450		(18,0-26,0)	
	2300	31,8-34,2	(30,8-35,2)	
	1500		(27,8-32,3)	
	1000	28,8-31,2	(27,8-32,2)	
	600	30,0-33,0	(28,5-34,5)	
switch-off				
Idle stop	380		(8,0-16,0)	
	400	5,0-11,0	(4,0-12,0)	
	500	max. 1,5		
End stop	300	min. 48		
	400	max. 45		

2.4 Solenoid — max. cut-in voltage xxx min. 10. Volt
test voltage ********* rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

G22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 o
8. Edition
En

PES 6 A 90 D 410 RS 2293 Z RSV 575-1250 A 1 B 618 L
A 1 C 618 L

Komb.-Nr. 0 400 876 195

supersedes 4.83
company Daimler-Benz
engine OM 352 A
107 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1230	11,2+0,1	7,5 - 7,6	0,3 (0,45			
575	6,1-6,3	1,0 - 1,6	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 33	575	6,2	-	-
	x = 5,0						575	6,1-6,3		
ca.65 (2a)	10,2	1260-1270					600-630	= 2,0 **		
	4,0	1295-1315								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1230	74,5 - 75,5 (72,5 - 77,5)	1260-1270 *	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 2,6 d
1. Edition
En

BR-PES 3 A 90 D 410 RS 2317
BR-EP/RSV 325-1200 A 1 B 1015 L

supersedes -
company Fiat
engine 31/1005

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	5,9 - 6,4	0,4			
1000	6,0	2,7 - 3,5				
1000	15,0	13,3 -14,3				
200	9,0	2,8 - 4,0				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.64	1200	16,0				ca.23	325	6,5	1180	0
	1250	10,2	without auxiliary spring				100	19 - 21	500	0
	1290	6,0					325	6,3 - 6,7	400	1,2 - 1,8
	1270	7,0-9,6					400	2,6 - 4,4		
(2a)	1300	3,6-6,2					450	1,0 - 3,4		
	1350	1,0-3,6	with auxiliary spring				550	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limital Note: changed to ..)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1180	74,0 - 76,0 (72,0 - 78,0)	1210-1230*	-	-	100	min. 130	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

Test Specifications Fuel Injection Pumps and Governors

(1) UPP 001/4 STE 6,0 h 3

2. Edition En

PE6A85D412RS2303 RQV250-1400AB 1091L superseded 3.80
Komb.-Nr. 0 400 050 154 company STEYR
engine: WD 612-60

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,80 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,3-11,4	7,6 - 7,7	0,3(0,45)			
250	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca.11	100	min.7,6	250	0,8
							250	5,9-6,1	490	2,5-2,7
ca. 45	10,3	1440-1450					350-410	=2,0	1450	8,3
	4,0	1540-1570					500	max. 1,0		
	1700	0 - 1,0				(3a)				

Torque control travel s = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm ±0,1
LDA	0,7 bar		LDA	0,7 bar	100	142,0-152,0	1400	11,3
1400	76,5 - 77,5 (74,5 - 79,5)	1440-1450*	800	70,0 - 73,0 (68,0 - 75,0)		(139,0-155,0)	950	11,4
				0 bar			850	11,7
			500	55,5 - 58,5 (53,5 - 60,5)			500	11,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

H1

3.85

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
2303 + 1091L	0,7		12,0 - 12,1
		0,18	11,7 - 11,8
		0,16	11,5 - 11,7
		0	11,3 - 11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Full-Load setting on governor; turn LDA adjusting screw 0.3...0.5 mm toward "increased" control-rod travel.

H2

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 STE 6,0 h 2

2. Edition

En

Testoil-ISO 4113

PE 6 A 85 D 412 RS 2303 RQ 250/1400 AB 1099 L

Komb.-Nr. 0 400 656 157

superseded 1.79

company: Steyr

engine: WD 612.60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,7+0,1	7,8 - 7,9	0,3(0,45)			
250		0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,5-16,4	650	16,0	10,7	1445-1460	250	5,5	100	mind.7,0	1400	11,7-11,8
				3,0	1530-1560			250	5,4-5,6	975	11,7-12,0
				1625	0 - 1,0					820	12,2-12,4
								380-420=2,0		600	12,4-12,5
								475	max.1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1400	0,7 bar 78,0 - 79,0 (76,0 - 81,0)		LDA 1000	0,7 bar 72,5 - 75,5 (70,5 - 77,5)	100	142,0 - 152,0 (139,0-155,0)
			LDA 500	0 bar 60,0 - 63,0 (58,0 - 65,0)		

Checking values in brackets

H3

3.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
2303 + 1099 L	0,70		12,4 - 12,5
		0,23	12,2 - 12,3
		0,20	12,0 - 12,2
		0	11,8 - 11,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

H4

En

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 VIA 5,7 a
1. Edition

En

Testoil-ISO 4113

PES 6 A 85 D 320/3 RS 2339 RSV 350-1250 A 1 B 279 R
A 1 C 279 R

Komb.-Nr. 0 400 866 029

supersedes
company Motori VM
engine 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 RW9 mm (from BDC) FB.Diff. zw RW 9 mm RW max. = 6,0-7,0°

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	9,7-9,8	5,3 - 5,4	0,3(0,45)			
350	7,3-7,5	1,0 - 1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 2,75	-	-	-	ca.16	350	5,5	1250	9,7-9,8
							100	min.19	400	10,8-11,4
ca.58 (2a)	1290-1300=8,7 1300-1330=4,0 1465=0,3-1,7						350 500 405-465	5,9-6,1 max.1,0 = 2,0	500	9,7-9,9

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	53,5 - 54,5 (51,5 - 56,5)	1290-1300*	-	-	100	110,0-130,0 = 19,0 - 21,0 mm RW	1250 500 400	9,7-9,8 9,7-9,9 10,8-11,4

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

H5

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 7,4 a 1

1. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2340 RQV 275-1200 AB 972 L (1)
250-1300 AB 961 DL (2)

supersedes
company OM Brescia
engine: CP3/100-136PS
CP3/130

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm min.⁻¹ 6
1200	10,9+0,1	7,6 - 7,7	0,3(0,45)	10,3-10,4	7,4 - 7,6	-n 1300
275	8,0-8,2	0,7 - 1,1	0,2(0,4)	7,8-8,0	0,9 - 1,5	-n 250

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

275-1200 AB 972L

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1250	15,0-18,0	-	-	-	ca.16	100	min.9,7	300	0,8-1,8
							275	8,0-8,2	800	3,8-4,2
							530-600	=2,0	1260	8,2
ca.64	9,9	1240-1250								
	4,0	1325-1335					300-600			
	1450	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes mm RW 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
1200	75,5 - 76,5 (73,5 - 78,5)	1240-1250*	-	-	100	14,7-15,3	-	-
						100-195 (80-215)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

H6

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

B. Governor Settings

..AB 961 DL

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1340	15,2-17,8		-	-	-	ca.21	100	min.11,5	200	0,4-1,5
								250	9,9-10,1	600	3,5-4,0
								790-850	=2,0	1350	8,2
ca.61	9,3	1340-1350						1050	0 - 1		
	4,0	1430-1460						250-650			
	1550	0 ◁ 1,0					(3a)				

Torque control travel a 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	74,5 - 75,5 (72,5 - 77,5)	1350-1350*	1100	74,0 - 76,0 (72,0 - 78,0)	100	109,25 - 119,25	1300	10,8-10,4
							500	10,5- 10,6
			500	61,5 - 63,5 (59,5 - 65,5)	100-170	(80-190)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Tesloil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

H7

En

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 4,1 b
2. Edition
En

Testoil-ISO 4113

PES 4 A 80 D 410 RS2346 EP/RS 325-1400 A0 B699DL
A0 C 699 DL

Komb.-Nr. 0 400 864 034

Test RS governor according to WPP 001/4, KHD 1 c

superseded 76
company K H D
engine F 4 L 913 (87 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,1 - 3,5	0,4			
	6	0,1 - 0,6				
200	9	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel Torque control travel: rev/min 10	mm 11
VHca.73	1400	15,8-16,5	-	-	-		325	8,3	1380	0
FH max.	1450	11,9-13,3					300	8,4-9,1	1200	0,4-0,6
	1500	7,7-9,8					400	6,0-6,8	1050	0,9-1,1
	1550	2,8-5,8					500	3,5-4,2	900	1,2-1,4
	1610	0,3-1,0					1400	2,2-2,8	550	1,2-1,4
							1470	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation: rev/min 3	Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point: rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel: rev/min 8	mm
1400	69,0 - 70,0 (67,5-71,5)	1420	800	62,0 - 65,0 (60,5-66,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

PES 6 A 85 D 410/3 RS 2415 RS 325/1325 AOB 691 DL,709DL superseded 3.83
AOC 691 DL,709DL company: KHD

engine: BF6 L 913
110 kW (150 PS)
2650 min⁻¹

Test RS governor according to WPP 001/4, KHD 1 c

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	12,0+0,1	8,7 - 8,8	0,3(0,45)			
325	8,2-8,4	1,4 - 2,0	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3- 0,7 7,0	-	-	-		325	6,5	1325	12,0+0,1
									500	12,5+0,2
							100	min.16,0	1060	12,1+0,2
							325	6,4-6,6		
ca.68 (5)	11,0	1355-1365					500	3,4-4,0		
	4,0	1450-1480					1330-1	370=2,0		
	1600	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1325	0,7 bar 86,5-87,5 (84,5-89,5)	1355-1365*	LDA 500	0 bar 56,0-58,0 (53,5-60,5)	100	15,0-16,0 mm RW	-	-
			LDA 800	0,7 bar 76,5-78,5 (74,0-81,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

H9

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2415 + ..A0B 691 DL + ..A0B 709 DL	0,27		11,6 - 11,8
		0,70	12,5 - 12,7
		0,37	12,2 - 12,3
		0	11,3 - 11,5

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 a 2
3. Edition
En

PES 6 A 85 D 410/3 RS 2415 RQV 750 A B 1004 L

Komb.-Nr. 0 400 836 016

superseded 9.82
company KHD
engine 6 L 913
kW /
1500 min⁻¹
A power output -
10% above rated output

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
720	$12,3^{+0,1}$	8,4 - 8,5	0,3(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca.25	11,3 4,0 820	760-765 789-799 0-1,0	-	-	-	- ③a	-	-	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
720	84,0-85,0 (82,0-87,0)	760-765*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

HAA

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 c 2

1. Edition

En

PE 10 A 95 D 610/4 LS 2452 RQV 300-1150 AB 988 DL

Komb.-Nr. 0 400 649 188

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes

compan KHD

engine: F 10 L 413 F
216 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,2-9,3	8,5-8,7	0,3 (0,6)			
300	5,9-6,1	0,9-1,4	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	250	0,5-0,7
ca. 65	8,2	1190-1200					300	5,9 - 6,1	550	2,9-3,1
	4,0	1225-1255					550-610	= 2,0	850	4,8-5,0
	1350	0-1,0					750	max. 1,0	1150	7,9
						300-450 ③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limit/don intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑥ travel rev/min 8	Control rod travel mm 9
1150	84,5-86,5 (82,5-88,5)	1190-1200*	700	83,0-86,0 (80,5-88,5)	100	13,2-14,2 mm RW	1150	9,2-9,3
							1000	9,4-9,6
			400	75,0-79,0 (72,5-81,5)			700	9,7-9,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

H12

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 9,2 e 3
2. Edition

En

PES 5 A 95 D 410 LS 2488 y RQV 250-1100 AB 850 DL

Komb.-Nr. 0 400 845 041

1-3-5-4-2 je 72° ±0,5° (±0,75°)

supersedes 5.84
company: MAN
engine: D 2565 MEFV
Saviem
137 kW/2200 min^{-1}
MAN-Nr. 1-7041

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1100	11,0+0,1	11,8-12,0	0,3(0,6)			
250	5,7-5,9	1,4-1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑦a ⑦b 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	ca.13	100	min.7,4	200	0,7-0,9
							250	5,7-5,9	500	3,5-3,8
ca.42	10,0	1140-1150					315-375=2,0		800	5,0-5,4
	4,0	1175-1205					450 max. 1,0		1100	7,7
	1350	0 - 1,0				③a				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ⑦b limitation Intermediate speed ⑦a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1100	117,5-119,5 (115,5-121,5)	1140-1150*	750	114,5-118,5 (112,5-120,5)	100	13,7-14,3 mm RW	1100	11,0+0,1
			500	111,5-115,5 (109,5-117,5)	250	6,0 mm RW	750	11,3+0,2
							500	11,4+0,

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

H13

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 d 1
3. Edition
En

Testoil-ISO 4113

PES 5 A 95 D 410 LS2488Z RQ 250/1100 AB839DL

supersedes 5.84

Komb.-Nr. 0 400 845 033

company MAN

1 - 3 - 5 - 4 - 2 je 72°±0,5° (±0,75°)

engine D 2565 MSFV
137 kW /2200 min⁻¹
MAN-Nr. 1-7838

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,7 - 11,9	0,3 (0,6)			
250	5,3-5,5	1,2 - 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	5,4	100	mind.6,9	1100	11,0-11,1
				4,0	1175-1205			250	5,3-5,5	800	11,3-11,5
								320-360 = 2,0		500	11,5-11,6

Torque control travel on flyweight assembly dimension a 0,2 mm

Speed regulation At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1100	116,5 - 118,5 (114,5 - 120,5)		800	114,5 - 118,5 (112,5 - 120,5)	100	120,0-130,0 (117,0-133,0) = 13,5-14,5 mm RW
			500	111,5 - 115,5 (109,5 - 117,5)	250	6,0 mm RW

Checking values in brackets

4.85

H14

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 e 2
2. Edition

En

PES 5 A 95 D 410 LS 2488 Z RQV 250-1100 AB 850 DL
Komb.-Nr. 0 400 845 034
1-3-5-4-2 je 72° ±0,5° (±75°)

supersedes: 7.84
company: MAN
engine: D 2565 M/MF
124 kW/2200 min^{-1}
MAN-Nr. 1-7803

Testcil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,9+0,1	9,5-9,7	0,3(0,6)			
250	5,7-5,9	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.50	1140	14,4-17,6	-	-	-	ca.13	100	7,5-10,2	200	0,7-0,9
	1200	4,0-10,6					200	5,7-8,5	500	3,5-3,8
	1220	0 - 8,0					300	2,5-5,3	800	5,0-5,4
	1300	0 - 1,0				(3a)	410	0	100	7,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	94,5-96,5 (92,5-98,5)	1140-1150*	800	98,5-102,5 (96,5-104,5)	100	15,5-16,5 mm RW	1140	0
			500	95,0-98,0 (93,0-100,0)	250	6,0 mm RW	550	0,4-0,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

H15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 f
4. Edition
En

Testoil-ISO 4113

PES 5 A 95 D 320 LS 2504 RQ 250/1100 AB 917 DR(1) supersedes 5.84
LS 2504Z RQ 250/1100 AB 968 DR(2) company M A N

Komb.-Nr. 0 400 845 031 (1) MAN-Nr. 1-7756 engine D 2565 MUL
0 400 845 032 (2) MAN-Nr. 1-7757 141 kW/2200 min^{-1} (1)
1 - 3 - 5 - 4 - 2 = 0 - 72 - 144 - 216 - 288° ±0,5° (±0,75°) 124 kW/2200 min^{-1} (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	11,4 - 11,6	0,3(0,6)	10,1+0,1	9,6 - 9,8	
250	6,4-6,6	1,5 - 2,1	0,4(0,5)	5,9-6,1	0,8 - 1,4	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

917DR (1)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,3	1145-1160	250	5,7	100	mind. 7,2	1100	11,3-11,4
				4,0	1175-1205			250	5,6-5,8	800	11,5-11,7
				1300	0 - 1,0			340-450	400=2,0 max.1,0	500	11,7-11,8

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation At 1145 - 1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	cm^3/100 strokes 7 mm RW
1100	114,0 - 116,0 (112,0 - 118,0)		800	111,0 - 115,0 (109,0 - 117,0)	100	13,7-14,3
			500	108,5 - 112,5 (106,5 - 114,5	250	6,5

Checking values in brackets

3.85

B. Governor Settings

968DR (2)

(2)

Checking of slider PRG check (1)		Full load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	9,2	1145-1160	250	6,0	100	mind.7,5	1100	10,1-10,2
				4,0	1185-1215			250	5,9-6,1	1000	10,3-10,6
				1250	0 - 1,0			350-450	410 =2,0 max.1,0	500	10,8-10,9

Torque control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At 1145 - 1160

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm RW
1	2	3	4	5	6	7
1100	96,0 - 98,0 (94,0 - 100,0)		800	101,5 - 105,5 (99,5 - 107,5)	100	13,7-14,3
			500	94,5 - 98,5 (92,5 - 100,5)	250	6,0

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 12,8 e
4. Edition
En

Testoil-ISO 4113

PE 8 A 90 D 320 LS 2514 RQ 250/1250 AB992DR
250/1250 AB832DR

superseded: a.82
company: M A N
engine: D 2538 M/MF
190 kW (256 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	10,2 - 10,3	0,3(0,45)			
250	7,4-7,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

.. 992DR

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1400-1430			250	5,9-6,1	970	11,6-11,9
				1500	0 - 1,0			360-400=	2,0	870	11,9-12,1
								500	max. 1,0	500	12,1-12,2

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation: At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1250	102,5 - 103,5 (100,5 - 105,5)	-	800	95,5 - 98,5 (93,5 - 100,5)	100	135 - 145
			500	90,0 - 94,0 (88,0 - 96,0)	250	7,5 mm RW

Checking values in brackets

3.85

H18

832DR

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min. 7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
								360-420	= 2,0		
1250	15,6-16,0							500	0 - 1		
1500	0 - 1										

Torque control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	101,5 - 102,5		500	78,0 - 86,0	100	18,0 - 18,6
	(99,5 - 104,5)			(76,0 - 88,0)	250	7,0

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MAN 16,0 d

8. Edition En

Testoil-ISO 4113

PE10A90D520/5 LS 2515

RQV 250-1250 AB993DR
RQ 250/1250 AB832DR ./.
RQ 250/1250 AB992DR ./.

superseded 5.84
company MAN
engine D 2530 MF

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
0 -45-72-117-144-189-216-261-288-333° ±0,5°(0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5-11,6	10,1-10,3	0,3(0,45)	11,5-11,6	10,3-10,4	
250	9,0-9,2	0,9- 1,5	0,2(0,4)	7,4-7,6	0,9- 1,5	
800/500	- - -	C, 4-5 -	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ▭.

Testoil-ISO 4113

B. Governor Settings

RQV..993 DR

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.50	1275 1450	14,4-17,4 0 - 1	-	-	-	ca.13	100 250 310-370 450	min.7,2 5,6-5,8 = 2,0 0 - 1	200 700 270	0,5-1,2 4,4-4,8 8,3
- - --	- - -	- - - - - -								
ca.48	10,5 4,0	1290-1300 1365-1395				(3a)				

Torque control travel a = 0,6+0,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	102,4-103,5 (100,5-105,5)	1290 - 1300*	800	95,5- 98,5 (93,5-100,5)	100	134,25-144,25	1250	11,5
					250	7,0 mm RW	900	12,0
			500	90,0- 94,0 (88,0- 96,0)			500	12,3
					100-170	(80-190)		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

H20

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B. Governor Settings

RQ..832 DR

Checking of slider PRG check ①		Full load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min.7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
								360-420	=2,0		
1250	15,6-16,0							500	0 - 1		
1500	0 - 1										

Torque control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	101,5 - 102,5		500	78,0 - 86,0	100	129,25 - 139,25
	(99,5 - 104,5)			(76,0 - 88,0)	250	7 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ..992 DR

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
				1500	0 - 1,0			360-400	=2,0	600	12,2-12,4
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	102,5 - 103,5	-	800	95,5 - 98,5	100	135,0-145,0
	(100,5 - 105,5)			(93,5 - 100,5)		(132,0-148,0) = 18,3-19,3 mm RW
			500	90,0 - 94,0		
				(88,0 - 96,0)	250	7,0 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 OMB 4,6 a

1. Edition

En

PES 4 A 90 D 410 RS 2518 RQ 300/1200 AB 989 DL

Komb.-Nr. 0 400 844 069

supersedes -

company: OM-Brescia

engine: CO 3/110
62,5 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,3+0,1	6,1 - 6,2	0,3 (0,45)			
300	7,9-8,1	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,3	1245-1260	300	6,0	100	min. 7,5	1200	10,3-10,4
				4,0	1360-1390			300	5,9-6,1	710	10,4-10,7
				1450	0 - 1,0			450-490	=2,0	630	10,8-11,0
								600	max. 1,0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1245 - 1260 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1200	60,5 - 61,5 (58,5 - 63,5)	500	900	55,5 - 58,5 (53,5 - 60,5)	100	117,0 - 123,0 (114,0 - 126,0) =16,2 - 16,6 mm RW
			500	58,5 - 61,5 (56,5 - 63,5)	300	9,0 - 15,0 (7,0 - 17,0)

Checking values in brackets

3.85

H22

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 4,6 c
1. Edition

En

PES 4 A 90 D 410 RS 2518 RQV 300-1400 AB 1018 L
Komb.-Nr. 0 400 844 072

supersedes -
company: OM-Brescia
engine: 8340.04.300
74 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,1	7,0 - 7,1	0,3(0,45			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1410	15,0-18,3	-	-	-	ca. 12	100	min. 7,9	250	0-1,0
ca. 66	9,8	1440-1450					300	6,3-6,5	630	2,3-3,1
	4,0	1500-1530					600-760	=2,0	1020	4,5-4,9
	1650	0-1,0					950	max. 1,0	1400	8,1
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed 2b 4a: rev/min 3	Fuel delivery characteristics high idle speed 5a 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point 6: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
1400	69,5-70,5 (67,5-72,5)	1440-1450*	-	-	100	16,2-16,6 mm PW	-	-
					300	9,0-15,0 (7,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

H23

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

PES 4 A 90 D 410 RS 2518 Z RQ 300/1200 AB 989 DL
Komb.-Nr. 0 400 844 074

supersedes -
company: OM-Brescia
engine: 8340.05.291
62,5 kW

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,1+0,1	7,0 - 7,1	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1000	14,2-15,8	1000	15,0	10,1 4,0	1245-1260 1370-1400	300	6,0	100 300 445-485=2,0 600	min. 7,5 5,9-6,1 max. 1,0	200 710 500	11,1-11,2 11,2-11,4 11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,4 mm
Speed regulation: At 1245 - 1260 min⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1200	69,5 - 70,5 (67,5 - 72,5)	500	900 500	65,5 - 68,5 (63,5 - 70,5) 61,5 - 64,5 (59,5 - 66,5)	100	125,0 - 135,0 (122,0 - 138,0) =16,6 - 17,2 mm RW

Checking values in brackets

3.85

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,2 K

1. Edition

En

Testoil ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 6
Komb.-Nr. 0 400 074 995

supersedes
company Daimler-Benz
engine OM 615
49 kW
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) Control rod travel 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,0+0,1	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1(0,15)			
1600			0,25(0,3)			
2300			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	7	Rotational speed rev/min 8	Control rod travel mm 9
11-15 (1)	min.11,0	250	50 (7)	12,4-12,6	2300	(12)	100	min. 20,1
(2)	max.10,5	300	(8)	9,5	2650	(13)	1600	12,7-12,9
(3)	6,1-6,3	375	(9)			(14)	1000	13,0-13,1
(4)	**	395	(10)	0-1,0	2900			
(5)	-		(11)				Switching point	
	2,0	720-820				(6)		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery Idle		
							Difference
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8
2300	38,5-40,5 (37,5-41,5)	2650* RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min. 53,0	6,0 (12a)
			1000	37,0-38,0 (36,0-39,0)	375	6,5-7,5 (6,0-8,0)	1,0 (1,5)
					2650	15,0-21,0 (14,0-22,0)	2,5 (3,0) (15)
							(16)

Checking values in brackets

* ca. 3 mm less control rod travel than in Column 2

J1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

1. ** Set the idle auxiliary spring at n = 395 min^{-1} so that the control-rod travel is exceeded by 1,4 - 1,5 mm.

2. Setting the idle control-lever position:

   At 1000 min^{-1}, control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

   Control-lever position 47°. After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30°. Speed range 350 min^{-1} - 450 min^{-1}

4. Check the pneumatic shutoff box

   Control lever at idle stop.
   At n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 m 1
3. Edition
En

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 17
Komb.-Nr. 0 400 074 956 Sales model 0 400 074 957

1 - 3 - 4 - 2
0 - 90-180-270

supersedes 1.84
company Daimler-Benz
engine OM 616
53 kW (72 PS)
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 18,5-21,5 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,4$^{+0,1}$	3,9-4,0	0,25(0,3)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
9-13	①	min.11,0	250	50	⑦	12,5-12,7	2200	⑫	100	min. 20,1
	②	max.10,5	300		⑧	8,2- 8,6	2500	⑬		
	③	6,0-6,2	375		⑨	-	-	⑭	1800	12,8-13,0
	④	**	400		⑩	0- 1,0	2950		1000	13,4-13,5
	⑤	-	-			-			Switching point	
		2,0	720-820		⑪			⑥		

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	(12a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0	1,0 1,5	(15)
					2500	23,0-27,0 (22,0-28,0)	2,5 See 3,0 Point 8 a	(16)

Checking values in brackets

4,2 less control rod travel than in Column 2

01.85

J3

1. ** Position the idle-speed auxiliary spring at n = 400 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

At 1000 min^{-1}, control-rod travel 1,4 - 1.5 mm

3. Testing the idle-speed auxiliary spring shutoff

Control-lever position 47^{0}. No change in control-rod travel after switching point up to 550 min^{-1}.

Control-lever position 30^{0}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

Control lever against idle stop.

At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 o 2
3. Edition
En

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 16
Komb.-Nr. 0 400 075 987 Sales model 0 400 075 988

1 - 2 - 4 - 5 - 3
0 - 72-144-216-288 ± 0,50 (0,75)

supersedes 1.84
company Daimler-Benz
engine OM 617
65 kW (88 PS)
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) Control rod travel 18,5-21,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,4 +0,1	3,9-4,0	0,25(0,3)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
9-13	min. 10,0	250	50	12,5-12,7	2200		100	min. 20,1
	max. 9,5	300		8,6- 9,0	2500		1800	13,0-13,2
	6,0-6,2	350		-	-		1000	13,4-13,5
	**	385						
	-	-		0-1,0	2950		Switching point	
	2,0	780-820						

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variation in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0
							1,5 (15)
					2500	23,0-27,0 (22,0-28,0)	2,5 See
							3,0 Point 8 a (16)

Checking values in brackets

ca. 4,0 less control rod travel than in Column 2

01.85

1. ** Position the idle-speed auxiliary spring at n = 385 min^{-1} so that the control-rod travel is forced further by 0.1 - 0.2 mm.

2. Adjusting the idle control-lever position:

   At 1000 min^{-1}, control-rod travel 1,4 - 1,5 mm.

3. Testing the idle-speed auxiliary spring shutoff

   Control-lever position 47^{0}. No change in control-rod travel after switching point up to 550 min^{-1}.

   Control-lever position 30^{0}. Rotational-speed range 350 min^{-1} - 450 min^{-1}.

4. Testing the pneumatic shutoff box

   Control lever against idle stop.

   At n = 375 min^{-1} and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 3,0 v
3. Edition
En

PES 5 M 55 C 320 RS 109-1
RSV 350-1650 MOC 350-1

Komb. 0 400 075 007 Sales model 0 400 075 008
1-2-4-5-3-0-72-144-216-288 ± 50 (075)

supersedes 8.84
company Daimler-Benz
engine OM 617
57 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) RW 20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1630	12,5+0,1	3,7-3,8	0,2 (0,3)			
350	6,2-6,5	0,6-0,8	0,1 (0,15)			
1150			0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.40	350	6,3	1150 1350 1630	13,2-13,3 12,7-12,9 12,5-12,6
ca.75 (2a)	11,6 = 1670-1680 4,0 = 1780-1800 0,3-1,7 = 2000		Set idle-speed auxiliary spring at 2 mm control-rod travel.							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104 °F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	1150	36,5-38,5 (35,5-39,5)	100	RW =20,3 min.53,0	350	6,3
					350	6,0-8,0 (5,5-9,0)		

* Adjustment angle = 0° horizontal control lever position.

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

J7

J7

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 3,0 v 3
2. Edition

En

PES 5 M 55 C 320 RS 109-1 RSV 400-2200 MOB 352

supersedes 1.84
company Daimler-Benz
engine OM 617
65 kW

Komb.-Nr. 0 400 075 005
Sales model 0 400 075 006

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2180	12,4+0,1	3,85-3,95	0,2 (0,3)			
400	6,2-6,4	0,6-0,8	0,1(0,15)			
1000	13,1+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.39	400	6,3	1000	13,1+0,1
									1500	12,6-12,9
									2180	12,4-12,5
ca.70 (2a)	2240-2250 = 11,4 2400-2420 = 4,0 2550 = 0,3-1,7									

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
2180	38,5-39,5 (37,5-40,5)	2240-2250*	1000	36,5-37,5 (35,5-38,5)	100	min. 53	400	6,3
					400	6,0-8,0 (6,5-9,0)		

* Adjustment angle = 0° horizontal control lever position.

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

J8

J8

Test oil ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 22
0 403 245 008

supersedes 5.82
company Daimler-Benz
engine OM 617A - USA
84,6 kW

See back before starting testing (setting the idle stage.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21 mm Control rod travel

ohne ALDA

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
30	①	min.11	100	67 ± 2	⑦	11,2	2300-2320	⑫	100	20,5-21,5
	②	max.11	320		⑧			⑬	1600	12,7-12,9
	③	5,3-5,4	365		⑨	4,0	2620-2720	⑭	1000	13,6-13,7
	④	**			⑩	0-1,0	2950		2180	11,7-11,9
	⑤	-			⑪	-	-	⑥	Switching point	
		-							260-310 (240-390)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5)	100	min.55,0	6,0	⑫a
			1000	53,5-54,5 (52,5-55,5)	365	9,0-10,0 (7,5-11,5)	1,0 (1,5)	
					375	(5,5-7,5)**	(1,5)	⑮
					2550	24,5-27,5 (23,5-28,5)	2,5 (3,0)	⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

01.85

J9

Test with ALDA

Point	min^{-1}	cm^3/1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

   Text replaces Section 4.1 of test instructions
   Set control-lever position 30°.
   Drive injection pump at n = 800 min^{-1}.
   Screw in spring retainer (torque-control retainer) so that control-rod travel of 1.0 - 1.3 mm is obtained.
   Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

   Bring sensing finger into engagement at n = 350 min^{-1} with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at n = 1000 min^{-1} and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

5. Shutoff check: Spring idle stop compressed,
   at n = 200 min^{-1} max. control-rod travel = 5 mm.

6. Pin projection dimension = 16.65 $\pm$ 0.1 mm

7. Checking the pneumatic shutoff:
   Control lever in idle position. Drive injection pump at n = 375 min^{-1}.
   At p_u = 450 mbar (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

Testoil-ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28

See back before starting testing (setting the idle stage.

supersedes

company Daimler-Benz

engine OM 617A - USA

Komb.-Nr. 0 403 245 012

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21 mm Control rod travel

ohne ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
30 ①	min.11	100	67 ± 2 ⑦			⑫	100	20,5-21,5
②	max.11	320	⑧	11,2	2300-2320	⑬	1600	12,7-12,9
③	5,3-5,4	365	⑨	4,0	2620-2720	⑭	1000	13,6-13,7
④	**		⑩	0-1,0	2950		2180	11,7-11,9
⑤	-		⑪	-	-	⑥	Switching point	
	-						260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5)	100	min.55,0	6,0
					365	9,0-10,0 (7,5-11,5)	1,0 (1,5) ⑫a
			1000	53,5-54,5 (52,5-55,5)	375	(5,5-7,5)**	(1,5)
					2550	24,5-27,5 (23,5-28,5)	2,5 (3,0) ⑮
							⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Test with ALDA

Point	min^{-1}	cm^3/1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

   Text replaces Section 4.1 of test instructions
   Set control-lever position 30°.
   Drive injection pump at n = 800 min^{-1}.
   Screw in spring retainer (torque-control retainer) so that control-rod travel of 1,4 - 1,7 mm is obtained.
   Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

   Bring sensing finger into engagement at n = 350 min^{-1} with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at n = 1000 min^{-1} and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

5. Shutoff check: Spring idle stop compressed.
   at n = 200 min^{-1} max. control-rod travel = 5 mm.

6. Pin projection dimension = 16.65 $\pm$ 0.1 mm

7. Checking the pneumatic shutoff:
   Control lever in idle position. Drive injection pump at n = 375 min^{-1}.
   At p_u = 450 mbar (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d1
5. Edition
En

PE 6 P 120 A 320 RS 3050 ROV 250 - 1100 PA 611

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83
company: Volvo
engine: TD 120 F
Komb.-Nr. 0 401 846 747

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 -2,5 (2,35-2,55) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	23,0 - 23,3	0,5(0,9)			2,5 ± 0,1
250	3,6-3,8	1,8 - 2,3	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 7	100	min. 5,1	200	0,7-0,9
ca. 64	11,8	1160-1170					250	3,6-3,8	500	4,2-4,8
	4,0	1225-1255					300	- 360=2,0	660-	6,4-6,6
	1350	0- 1,0							1040	
						(3a)			100	7,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1160-1170*	LDA	0 bar	-	-	-	-
700	230,0-233,0 (227,0-236,0)		700	138,0-142,0 (135,0-145,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

J13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

VOL 12,0 d 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P .. RS 3050 + RQV .. PA 611	1,20	0 0,82 0,07	12,8 - 12,9 9,1 - 9,2 12,6 - 12,7 9,2 - 9,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

② Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 ROL 16,3 a
1. Edition
En

PE 8 P 120 A 120 RS 3059 RQ 750 PA 416 R
Komb.-Nr. 0 401 838 700
1 - 4 - 3 - 5 - 8 - 7 - 6 - 2 je 45° ± 0,5° (± 0,75°)

supersedes -
company: Rolls Royce
engine: CV 8 TCA
250 kW (340 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,6 (3,45-3,65) mm (from BDC) RW= 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,4+0,1	24,7-25,1	0,5(0,9)			
300	6,1-6,3	3,8-4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	13,4 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery idle speed ⑥ rev/min 6	Control rod travel mm 7
700	247,0-251,0 (244,0-254,0)	-	-	-	100	19,5 - 21,0

Checking values in brackets

2.85

J15

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 t. 1
1. Edition
En

PE 6 P 110 A 720 RS 3065 RSV 350 - 900 P 7/481
Komb.-Nr. 9 400 087 286

supersedes -
company Saab-Scania Brasilien
engine D 11
137 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tastoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 -3,4 (3,25-3,45) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,2-0,1	13,5-13,7	0,4 (0,8)			2,5 ± 0,1
950	6,0-6,2	0,8-1,2	0,2 (0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 20	350	5,6	-	-
	x = 6,0						100	min. 20,0		
ca.56	11,2	940-950					350	6,0-6,2		
(2a)	4,0	970-1000					475 - 535	= 2,0		
	1100	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
900	135,0-137,0 (132,0-140,0)	940-950*	600	132,5-136,5 (129,5-139,5)	100	190,0-240,0 =20,0-21,0 mm RW		
					950	8,0-12,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 i

5. Edition

En

PE 6 P 120 A 720 RS 3069 RQV 300-1000 PA 501

supersedes 10.83
company: Fiat
engine: 8210.22.269
220 kW

Komb.-Nr. 0 401 846 728
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	20,1-20,3	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min.7,6	325	1,2-1,4
							300	6,0-6,2	450	2,6-3,1
ca. 65	11,4	1040-1050							800	5,7-6,0
	4,0	1115-1145				350-455			1000	7,9
	1250	0-1,0				③a				

* Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 201,0-203,0 (198,0-206,0)	1040-1050*	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

J17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3069 +RQV..PA 501	0,70		12,4-12,5
		0	10,0-10,1
		0,36	11,6-11,7
		0,31	10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 h

6. Edition

En

PE 6 P 120 A 720 RS 3069 RQ 300/1000 PA 502

Komb.-Nr. 0 401 846 729
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.83
company Fiat
engine 8210.22.373

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	20,1-20,3	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,4	1045-1060	300	6,1	100	min.7,6	1000	12,4-12,5
VH=	max. 46°			4,0	1130-1160			300	6,0-6,2	600	12,4-12,6
				1250	0-1,0			365-405	=2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1045-1060 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	-	LDA	0 bar	100	175,0-195,0
1000	201,0-203,0		1000	158,0-160,0		(171,0-199,0)
	(198,0-206,0)			(155,0-163,0)		

Checking values in brackets

3.85

J19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PE 6 P..RS 3069 +RQ..PA 502	0,70	 0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 i 1

1. Edition

En

PE 6 P 120 A 720 RS 3069 RQV 300-1200 PA 727

Komb.-Nr. 9 400 087 309

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-
company: Fiat Diesel
engine: 8210.11
220 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	19,9-20,1	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min.7,6	325	1,2-1,4
							300	6,0-6,2	450	2,6-3,1
ca. 65	11,4	1040-1050							800	5,7-6,0
	4,0	1115-1145							1000	7,9
	1250	0-1,0				350-455 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 199,0-201,0 (196,0-204,0)	1040-1050*	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

J21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3069 +RQV..PA 727	0,70	0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 a

6. Edition En

PES 6 P 120 A 320 RS 3078 RQV 250-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 5.83
company RVI
engine: MIDR 063540
223 kW (304 PS)
Komb.-Nr. 0 402 046 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65) 3,50-3,60 mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,3-19,5	0,5(0,8)			
250	4,3-4,5	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Mark for start of pump delivery on tester body 12° after start of pump delivery, cylinder No. 1 = 9,0-12,0 mm control-rod travel.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1160	15,2-17,8	-	-	-	ca. 9	200 300	min.6,0 4,3-4,5	250 800 100	0,9-1,0 4,6-4,8 7,7
ca. 66	11,9 4,0 1350	1160-1170 1235-1265 0-1,0				290-400 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 193,0-195,0 (190,0-198,0)	1160-1170*	LDA 500	0 bar 124,0-126,0 (121,0-129,0)	100 100-	150,0-170,0 146,0-174,0) 70 (80-190)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P..RS 3070 +RQV..PA 495	0,70	0 0,29 0,21	12,9-13,0 10,6-10,7 12,5-12,6 11,0-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f 5

1. Edition

En

FE 6 P 120 A 320 RS 3071 RQV 300-1050 PA 371-1
Komb.-Nr. 0 401 846 780
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: Volvo
engine: TD 1206 BM

Test-ISO 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 -2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,5+0,1	17,5 - 17,7	0,5 (0,9)			2,5 ± 0,1
300	5,3-5,5	1,7 - 2,1	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 14	100	min. 6,8	250	1,1-1,3
ca. 43	9,5	1105-1115					250	5,3-5,5	520	3,1-3,5
	4,0	1185-1215					380 - 440	=2,0	780	5,0-5,3
	1325	0-1,0							1050	7,5

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 175,0-177,0 (172,0-180,0)	1105 - 1115	LDA 1000	0,9 bar 180,0-186,0 (177,0-189,0)	-	-	-	-
					300	17,0 - 21,0		
			LDA 700	0 bar 148,0-152,0 (146,0-154,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

K1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P .. RS 3071 + RQV .. PA 371-1	0,90		10,5 - 10,6
		0	9,1 - 9,2
		0,57	10,1 - 10,2
		0,41	9,4 - 9,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f 4
3. Edition
En

PE 6 P 120 A 320 RS 3071 Z RQV 250-1025 PA 371
Komb.-Nr. 0 401 846 766
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83
company: Volvo
engine: TD 120 G/USA
243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 -2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	19,6 - 19,8	0,5 (0,9)			2,5 ± 0,1
250	5,8-6,0	2,2 - 2,6	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 12	100	min. 7,3	200	0,7-0,9
ca. 42	10,4	1065-1075					250	5,8-6,0	475	2,8-3,1
	4,0	1145-1175					350-410	= 2,0	750	4,8-5,1
	1300	0-1,0				(3a)			1025	7,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,9 bar	1065 - 1075*	LDA	0 bar	100	240,0-280,0	-	-
700	196,0-198,0		700	164,0-168,0		= RW 20,0		
	(192,0-202,0)			(161,0-171,0)		21,0 mm		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

K3

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 3071 Z + RQV .. PA 371	0,90		11,4 - 11,5
		0	9,9 - 10,0
		0,45	11,0 - 11,1
		0,28	10,1 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f2
2. Edition

En

PE 6 P 120 A 320 RS 3071 Z RQV 250-1100 PA 371/2R
Komb.-Nr. 0 401 846 765

supersedes 1.83
company: Volvo
engine: TD 120 F

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 0 67

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	24,1-24,3	0,5(0,9)			
250	5,3-5,5	2,2-2,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.6,8	200	0,7-0,9
ca. 46	11,7	1140-1150					250	5,3-5,5	500	2,9-3,3
	4,0	1215-1245					300-360=2,0		800	5,1-5,4
	1350	0 - 1,0				③a			100	7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 241,0-243,0 (238,0-246,0)	1140-1150*	LDA 700	0 bar 153,0-157,0 (150,0-160,0)	100	240,0-260,0 = RW 20,0 - 21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

K5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

VOL 12.0 f 2

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 3071Z + RQV..PA 371/2R	0,67	0,90 0 0,26	11,9-12,0 12,7-12,8 9,3- 9,4 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K6

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/SCA 8,0 m 3

2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 750 PA 528

supersedes 6.83
company Scania
engine DS 840

Komb.-Nr. 0 401 846 775

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	11,7-11,9	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	117,0-119,0 (115,0-121,0)	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

K7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 8,0 m
2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 900 PA 528
Komb.-Nr. 0 401 846 776

supersedes 6.83
company Scania
engine DS8 40

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	12,0-12,2	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	120,0-122,0 (118,0-124,0)	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

K9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 8,0 m 2
2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 750 PA 528-1
Komb.-Nr. 0 401 846 777

supersedes 6.83
company Scania
engine DS 16 40

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,6+0,1	13,2-13,4	0,6 (0,8)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,6 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2.	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	132,0-134,0 (130,0-136,0)	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

K11

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 17° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

K12

PE 6 P 110 A 720 RS 3076 RQ 900 PA 528-2
Komb.-Nr. 0 401 846 778

supersede 6.83
company Scania
engine DS 18 40

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 - 3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,6+0,1	13,4-13,6	0,6(0,8)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,6 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	134,0-136,0 (132,0-138,0)	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

K13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 17° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 STE 12,0 b 2

1. Edition

En

PE 8 P 110 A 121 LS 3113 RQV 250-1100 PA 702

Komb.-Nr. 0 401 858 703

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45° ± 0,5° (± 0,75°)

supersedes

company Steyr

engine: WD 815.67
242 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,8+0,1	15,0-15,2	0,4(0,75)			
250	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (2a) (1a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,6	200	0,7-0,9
ca. 62	10,8	1140-1150					250	6,1-6,3	500	3,6-4,1
	4,0	1210-1240					425-485	= 2,0	800	5,4-5,7
	1350	0-1,0							1100	8,0
						(3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 1100	0,9 bar 150,0-152,0 (147,0-155,0)	1140-1150*	LDA 600	0,9 bar 166,0-170,0 (163,0-173,0)	100	200,0-240,0 (196,0-244,0)	1100	11,8+0,1
							600	12,7+0,1
			LDA 500	0 bar 107,0-109,0 (104,0-112,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

K15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3113 + RQV..PA 702	0,90	0 0,65 0,48	12,7-12,8 9,7-9,8 12,2-12,4 10,6-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K16

PES 6 P 110 A 820 LS 3131-10 RQ 300/1100 PA 723
Komb.-Nr. 0 402 046 751

supersedes-
company Daimler-Benz
engine OM 427 H
177 kW

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,3-4,4 (4,25-4,45) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,0-14,2	0,4(0,8)			
300	7,4-7,6	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,8)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	11,2	1145-1160	300	7,5	100	min. 9,0	-	-
VH =	max. 46°			4,0	1190-1220			300	7,4-7,6		
				1300	0-1,5			340-380	= 2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1100	140,0-142,0 (137,0-145,0)	-	600	117,0-121,0 (114,0-124,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

3.85

K17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

① Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 k 2

2. Edition

En

PE 8 P 120 A 320 LS 3807-10 RQV 300-1150 PA 545-2
Komb.-Nr. 0 401 848 762

supersedes 12.84

company: Daimler-Benz

engine: OM 422 A
243 kW

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,0-4,1 mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,3-15,5	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
750	-	C, Sp.4 u. 5	0,7(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min.6,7	300	1,6-1,8
							300	5,0-5,2	800	6,0-6,2
ca. 54	9,5	1190-1200					335-405	=2,0	1200	8,1-8,3
	4,0	1235-1265							1260	9,9
	1350	0-1,0				(3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (6): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 153,0-155,0 (150,0-158,0	1190-1200*	LDA 750	0,7 bar 171,0-174,0 (168,0-177,0)	100	140,0-160,0 (136,0-164,0)	1150 750	10,5+0,1 11,1+0,2
			LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

K18

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 8 P..LS 380?-10 +RQV..PA 545-2	0	 0,45 0,50	 10,3-10,4 10,4-10,5 10,8-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 011/4 MB18,3a
2. Edition
En

Testoil-ISO 4113

PE 10 P 110 A 320 LS 3808 RQ 300/1150 PA 187-3

Komb.-Nr. 0 401 042 700

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 -45 -72 -117-144-189-216-261-288-333° ± 0,50°(±0,75°)

supersedes: 8.80
company: Daimler Benz
engine: OM 423
259 kW(352 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,00-4,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 150	12,2±0,1	12,3 - 12,5	0,4(0,75)			
300	8,0-8,2	1,6 - 2,2	0,4(0,9)			
600	-	C.Sp. 4-5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13.0-14,0	650	13,5	11,2	1195-1210	300	8,1	100	min.10,2	-	-
				4,0	1235-1265			300	8,0-8,2		
				1350	0 - 1,?			420-460	= 2,0		
								550	max.1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
1150	123,0 - 125,0 (120,5 - 127,5)	600	600	116,0 - 120,0 (113,0 - 123,0)	100	130,0 - 150,0 (126,0-154,0)

Checking values in brackets

4.85

K20

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,0 e 1
2. Edition
En
3.84

supersedes

company Daimler-Benz

engine OM 421 A
184 KW

Komb.-Nr. 0 401 876 733

PE 6 P 120 A 320 LS 3810 RSV 350 - 1150 PO/810
1- 6- 3- 5- 2- 4
0-75-120-195-240-315° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,6+0,1	16,3-16,5	0,5 (0,9)			
350	4,7-4,9	1,6- 2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	- - -	ca. 36	350	4,8	-	-
	x	= 4,75			100	min. 19,5		
ca. 56	9,6	1175-1185			350	4,7 - 4,9		
(2a)	4,0	1250-1270			380-440	= 2,0 **		

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	163,0 - 165,0 (160,0 - 168,0)	1175-1185*	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 f
7. Edition
En

Testoil-ISO 4113

PE8P120A320LS3811 RQ 300/1150 PA 556
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 6.84
company Daimler-Benz
engine OM 422 A
243 kW (330 PS)

Komb.-Nr. 0 401 848 734

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,4 ±0,1	16,2 - 16,4	0,4(0,8)			
300	5,0-5,2	1,4 - 2,2	0,8(1,2)			
600	-	C.Sp. 4' u. 5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1-20,8	600	20,0	9,4	1195-1210	300	4,2	100	min.6,0	-	-
				4,0	1225-1255			300	4,1-4,2		
VH =	max.46°							340-380	=2,0 mm		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1195-1210 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1150	162,0 - 164,0 (159,0 - 167,0)	-	600	152,0 - 158,0 (149,0 - 161,0)	100	125,0-145,0 (121,0-149,0)

Checking values in brackets

3.85

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,0 r
1. Edition
En

PE 6 P 110 A 320 LS 3814-10 RQ 300/1150 PA 187-6
Komb.-Nr. 0 401 846 805

supersedes –
company Daimler-Benz
engine OM 421
159 kW

1 - 6 - 3 - 5 - 2 - 4
0 -75 -120-195-240-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-No. 1130 413

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 6; RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,4+0,1	13,2-13,4	0,4(0,8)			
300	8,3-8,5	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0-1,0	300	8,4	100 300 430-470	min.10,0 8,3-8,5 =2,0	–	–

Torque-control travel on flyweight assembly dimension a = – mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
1150	132,0-134,0 (129,5-136,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

3.85

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,0 k 1
1. Edition
En

PE 6 P 110 A 320 LS 3814-10 RSV 350-1150 POA 810
Komb.-Nr. 0 401 876 723
1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes -
company Daimler-Benz
engine OM 421
159 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,1+0,1	13,5 - 13,7	0,4 (0,8)			
350	7,7-7,9	1,4 - 2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 28	350	7,8	-	-
	x = 3,25						350	7,7-7,9		
ca.53 (2a)	11,1	1165-1175					430 -	490 = 2,0		
	4,0	1240-1260								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	135,0-137,0 (132,5-139,5)	1165-1175*	-	-	100	140,0-160,0 - (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

K24

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,0 q

3. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 650-1150 P1/820 R

supersedes 3.83

company Daimler-Benz

engine OM 421 A
184 kW

Komb.-Nr. 0 401 876 722

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) 7yl. 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0+0,1	16,3-16,5	0,5(0,9)			
650	3,5-3,7	1,6-2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	- - -	ca. 36	650	3,6	-	-
	X = 3,0				650	3,5-3,7		
	10,0	1160-1170			655-715	= 2,0 **		
(2a)	4,0	1185-1200						
	1300	0,3-1,7						

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	163,0-165,0 (160,0-168,0	1160-1170*	-	-	100	140,0-160,0 - (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,0 q 2

1. Edition

PE 6 P 120 A 320 LS 3815 RSV 750-1150 P 1/820-1 En

supersedes

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

company Daimler-Benz
engine OM 421 A
184 kW
Komb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0+0,1	16,3-16,5	0,5 (0,9)			
750	3,6-3,8	1,8-2,4	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 36	750	3,7	-	-
	x = 4,0						750	3,6-3,8		
ca. 60 (2a)	10,0	1160-1170					655-815	= 2,0		
	4,0	1185-1200								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	163,0-165,0 (160,0-168,0)	1160-1170*	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

L2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,0 q 3

1. Edition

En

PE 6 P 120 A 320 LS 3815-10 RSV 750-1150 P 1 A 820-1

1- 6- 3 - 5 - 2 - 4

0-75-120-195-240-315° ± 0.5° (± 0.75°)

supersedes

company Daimler-Benz

engine OM 421 A

184 kW

Komb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0+0,1	16,3-16,5	0,5 (0,9)			
750	3,6-3,8	1,8-2,4	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 36	750	3,7	-	-
	x =	4,0					750	3,6-3,8		
ca. 60 (2a)	10,0	1160-1170					655-815	= 2,0		
	4,0	1185-1200								
	1300	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	163,0-165,0 (160,0-168,0)	1160-1170*	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o
3. Edition

En

PE 8 P 120 A 320 LS 3816 RQV 350 - 1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
company: Daimler Benz
engine: OM 422 A
243 kW (330 PS)
Komb.-Nr. 0 401 848 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing (2)

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8 - 16,0	0,5(0,9)			
350	4,9-5,1	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1240	15,2-17,8	-	-	-	ca. 10	100	min.6,0	300	0,6-0,9
ca. 63	10,0	1190-1200					350	4,5-4,6	580	3,6-3,7
	4,0	1270-1300							870	5,2-5,3
	1400	0- 1,0				370-480 (3a)			1150	7,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	140,0-160,0	1050	11,0+0,1
							850	11,4+0,1
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)			750	11,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

L4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3816	0,70		11,6 - 11,7
+ RQV .. PA 590		0	10,5 - 10,6
		0,47	11,4 - 11,5
		0,40	10,9 - 11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L5

En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o 1
1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RQV 350 - 1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 5 je 45° ± 0,5 (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: Daimler Benz
engine: OM 422 A
243 kW (330 PS)
Komb. Nr. 0 401 848 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8 - 16,0	0,5(0,9)			
350	4,9-5,1	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1240	15,2-17,8	-	-	-	ca. 10	100	min.6,0	300	0,6-0,9
ca. 63	10,0	1190-1200					350	4,5-4,6	580	3,6-3,7
	4,0	1270-1300							870	5,2-5,3
	1400	0- 1,0				370-480 (3a)			1150	7,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	1050	1,0+0,1
1150	158,0-160,0		600	166,0-172,0		(136,0-164,0)	850	1,4+0,1
	(155,0-163,0)			(163,0-175,0			750	1,5+0,2
			LDA	0 bar				
			500	140,0-142,0				
				(137,0-145,0				

Checking values in brackets

* 1 mm less control rod travel then col. 2

2.85

L6

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3816-10 + RQV..PA 590	0,70	0 0,47 0,40	11,6 - 11,7 10,5 - 10,6 11,4 - 11,5 10,9 - 11,0

Notes:

(*) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 9,0 a

1. Edition

En

PE 6 P 120 A 320 RS 7102 RQV 200-1100 PA 712-1
Komb.-Nr. 0 402 646 800

supersedes..
company: Scania
engine: DS 9 01

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	16,3-16,5	0,6(0,9)			3,3±0,1 (3,0-3,5)
225	4,8-5,0	1,5-1,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 10 ③a	100 min.6,3 225 4,8-5,0 300-360=2,0		225 350 420 550 1140	0,9-1,0 2,3-3,2 3,7-4,5 5,0-5,2 8,8
ca. 63	11,0 4,0 1450	1140-1150 1280-1310 0-1,0								

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 163,0-165,0 (160,0-168,0)	1140-1150*	LDA 1100	0,9 bar 164,0-172,0 (162,0-174,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 141,0-145,0 (139,0-147,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

L8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 7102 +RQV..PA 712-1	0,90	0 0,42 0,38	12,0-12,1 11,3-11,4 11,7-11,8 11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 j

1. Edition

En

PE 6 P 120 A 720 RS 7104 Y RQV 200-1000 PA 725
Komb.-Nr. 0 402 646 821 Y
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company: Saab-Scania
engine: DSC 11 02

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5-4,6 (4,45-4,65) mm (from BDC) RW=6,0-8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	16,0+0,1	22,4-22,6	0,7(1,0)			3,3±0,1 (3,0-3,5) **
225	4,4-4,6	1,4-1,8	0,3(0,6)			
			Port closing difference between camshaft travel 7,0 - 14,7 mm and max. 1			control-rod 85 - 2,55°

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 10 ③a	100	min.5,9	150	0-0,4
							225	4,4-4,6	430	2,9-3,4
ca. 62	15,0	1040-1050					310-370	=2,0	720	5,0-5,3
	4,0	1175-1205							1000	7,9
	1300	0-1,0								

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 224,0-226,0 (221,0-229,0)	1040-1050*	LDA 1000	0,9 bar 220,0-228,0 (218,0-230,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 164,0-168,0 (162,0-170,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

L10

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 7104 Y +RQV..PA 725	0,90	0 0,41 0,29	16,0-16,1 11,8-11,9 14,0-14,1 12,4-12,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 17.5.1984
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm